FEBRUARY 1959

FOOD PROCESSING

THE NEWS MAGAZINE . . .
of applied technology — new food products
ingredients, processing, packaging, production
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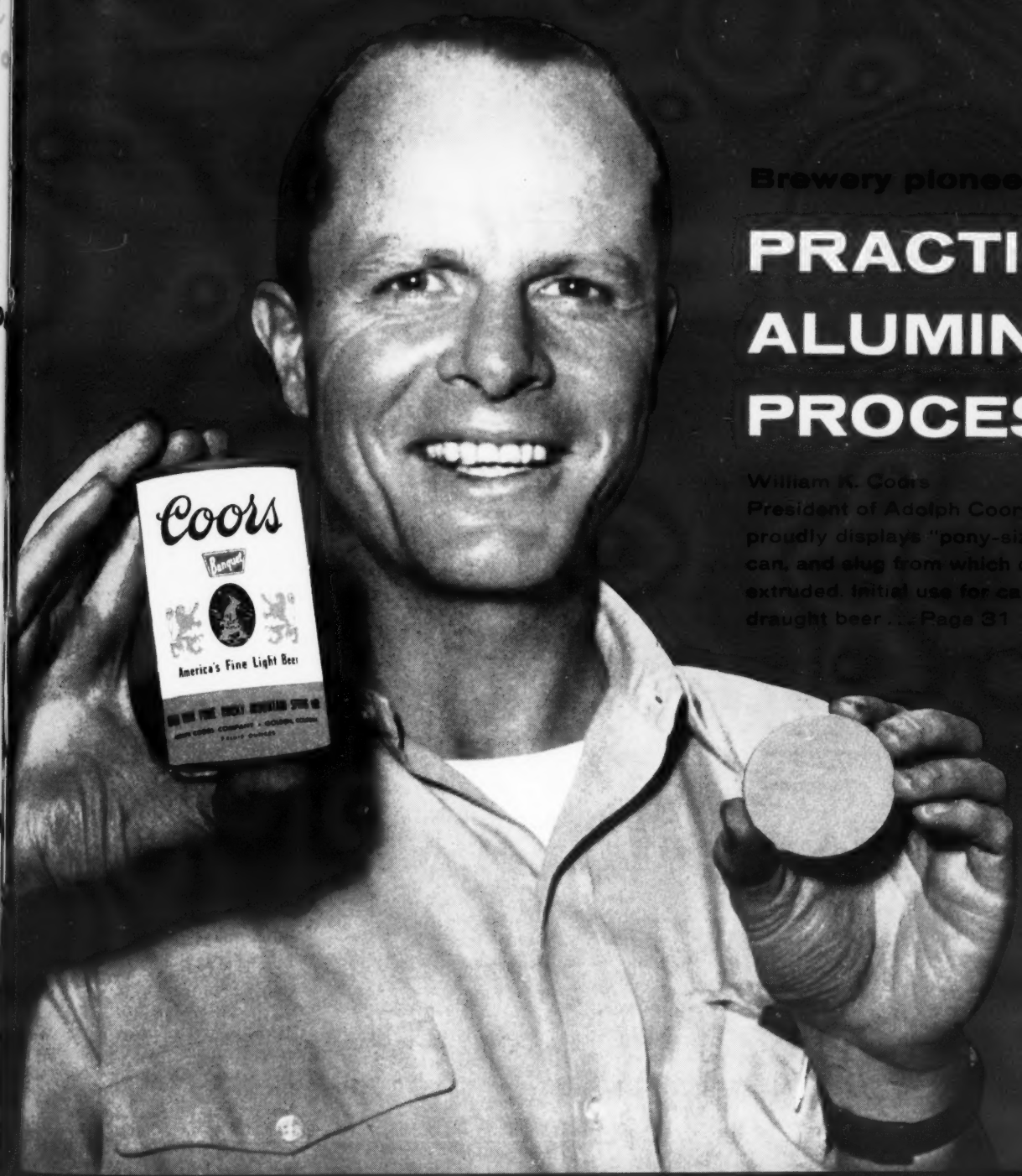
Upheaval in Beverage Processing 35



Brewery pioneers

PRACTICAL ALUMINUM CAN PROCESS

William K. Coors
President of Adolph Coors Company proudly displays "pony-size" aluminum can, and slug from which can is impact-extruded. Initial use for can is for draught beer. ... Page 31

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that's interesting

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New type of boxcar reduces damage to goods in rail transit by four-fifths. (Rail freight damage amounts to over $100 million per yr in US.) Car has a shock-absorbing underframe operating on new principle, termed Hydra-Cushion. Not only does it greatly reduce initial shocks to both car and contents in normal rail operation, but also the recoil – potentially hazardous to certain products — is virtually ended.

Underframe construction is joint development of Southern Pacific Company and Stanford Research Institute. Former placed 350 new cars with the shock-absorbing underframes in service during summer of 1957. Cars have been reserved for products most susceptible to damage, such as canned foods, tinplate and glass.

Removing moon dust from space ships . . .

may be a problem facing cleaning specialists according to the 50th Anniversary issue of Oakite News Service.

This 28-page booklet reviews the history of developments in industrial cleaning practices and is available on request.

For your copy simply circle 6096 on Reader Service Slip.

Corn pickers reap grim harvest

In Minnesota alone during fall 1956, mechanical corn pickers and elevators accounted for 71 fingers, 5 thumbs, 12 hands, 3 arms and one leg. Survey, made by Glenn Prickett, University of Minnesota extension farm safety specialist, was based on newspaper clippings of reported accidents. (*USDA Farm Paper Letter*, No. 795)

Something fishy about this Congress

A "forward look" at the fishing boat of 1975, which may be atomic-powered and possess many features which today have not passed the ideas stage, will provide one of highlights of the Second World Fishing Boat Congress, to be held at headquarters of UN Food and Agriculture Organization (FAO), Viale delle Terme di Caracalla, Rome, Italy, April 5-10, 1959.

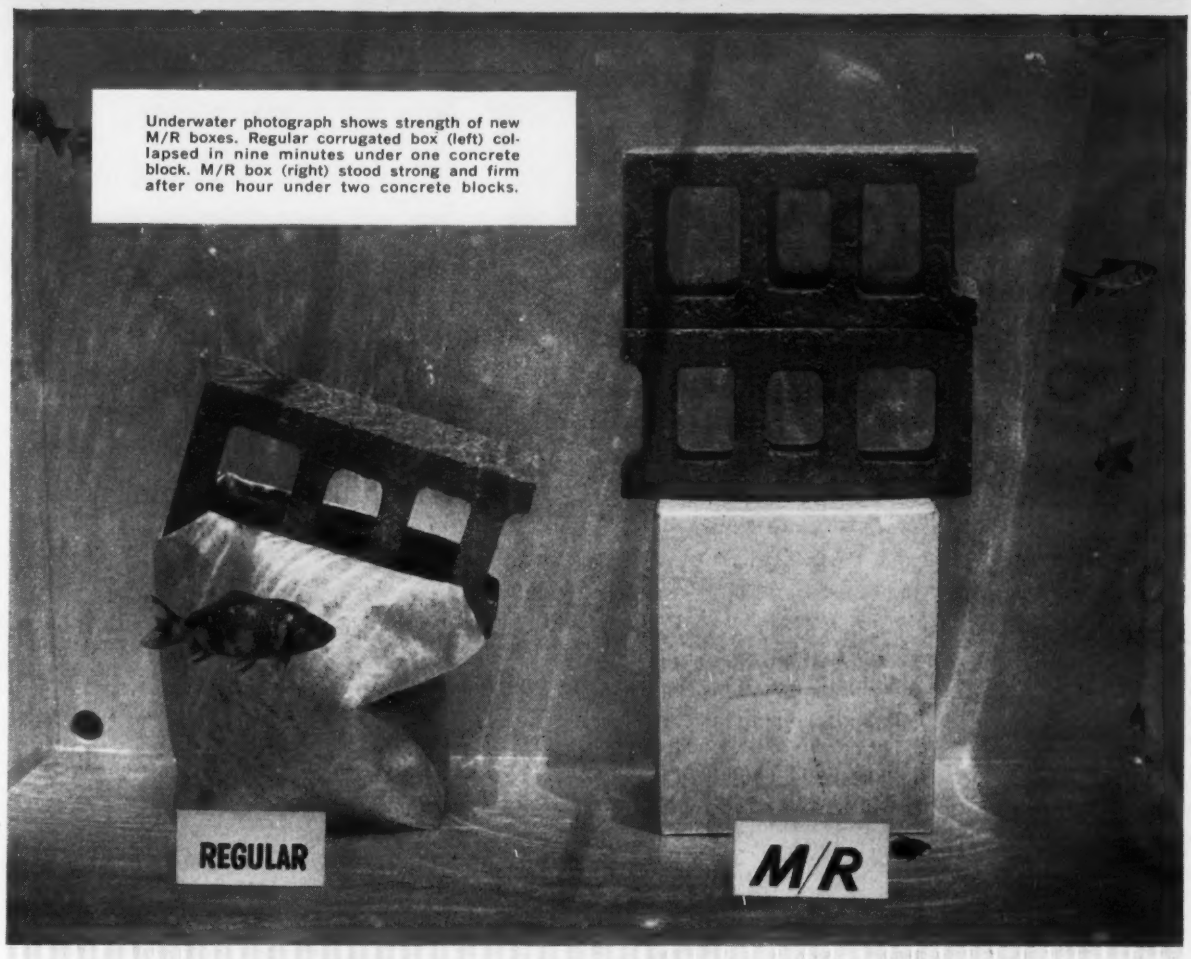
The Congress will concentrate on "performance," and sessions will deal with fishing tactics, construction of fishing vessels, sea behaviour of fishing boats and productivity of boats. About 50 problem papers and some descriptive papers will be presented.

A lot of tanks we get

Mushrooming rates of growth in the nation's bulk milk tank installations are revealed by series of surveys by Dairy Industries Supply Association, 1145 Nineteenth St. N.W., Washington 6, D.C., and National Association of Dairy Equipment Manufacturers. Total installations increased from 29,885 on January 1, 1956, to 57,386 on January 1, 1957 — a gain of 91.8 per cent — then rose another 59.2 per cent to 91,363 by beginning of 1958.

Still leading in total installations is Wisconsin, with 11,336. Second highest total — 8000 — was scored by the state with largest increase of year, Michigan, where a 5000 gain upped previous total 266 per cent.

Among leaders in percentage of conversion to bulk are Arizona and Florida, where relatively small numbers of dairy farms are coupled with fairly high conversion rates. About 95 per cent of Arizona dairymen are using farm tanks (total of 470), and 875 of the 926 producing dairies in Florida now have tanks.



Underwater photograph shows strength of new M/R boxes. Regular corrugated box (left) collapsed in nine minutes under one concrete block. M/R box (right) stood strong and firm after one hour under two concrete blocks.

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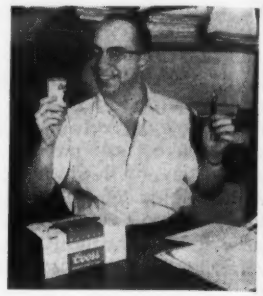
over the editor's shoulder



New glitter in Golden

That "something big was brewing" in Golden, Colorado, in the form of an aluminum can line for beer has long been known to FOOD PROCESSING.

A predecessor on the FP staff — alert to events in the Rockies — had already conducted several reconnaissance forays via correspondence with the Colorado brewing firm prior to April 1957.

Neither his attempts to mine the potentially rich lode of information, nor others that followed, proved immediately rewarding. We suspended "digging" operations to await a stage of development that would justify publicity in the judgment of Coors officials.

Payoff for this patience came very suddenly last month. Now, by turning to page 31 the reader is invited to see just what was brewing in Golden besides fine quality beer.

Incidentally, FOOD PROCESSING is delighted to present on this issue's front cover a company president who appears as well acquainted with the workings of an aluminum can line, or a copper brewing kettle, as with budgets and board of directors meetings.

Under Bill Coors, his brewery's future indeed appears golden.

Jack Lenien

ASSOCIATE EDITOR

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OVER 39,000 CIRCULATION

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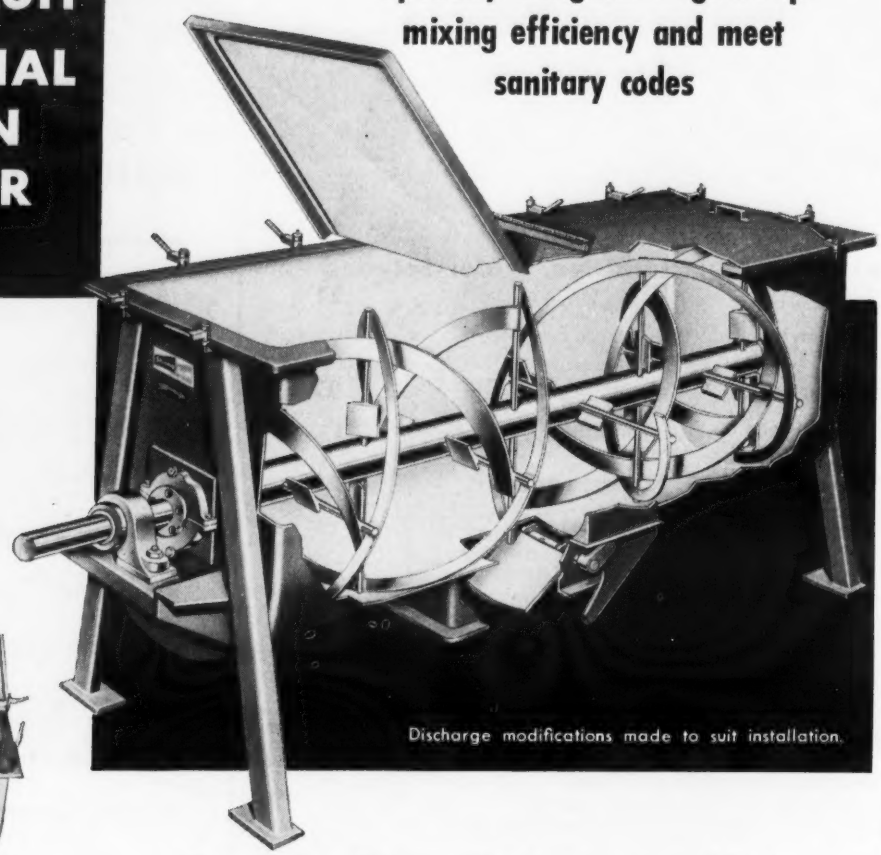

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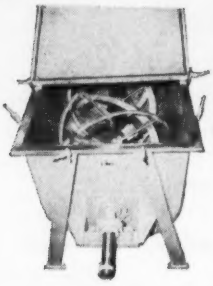

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February 1959 Vol. 20 No. 2

Published monthly by

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Printed in the United States

FOOD PROCESSING

(Food Processing Preview)

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EDITORIAL STAFF

Editor
Howard P. Milleville

Managing Editor
R. D. McCormick

Associate Editor, Palo Alto, Calif.
Karl Robe

Associate Editor
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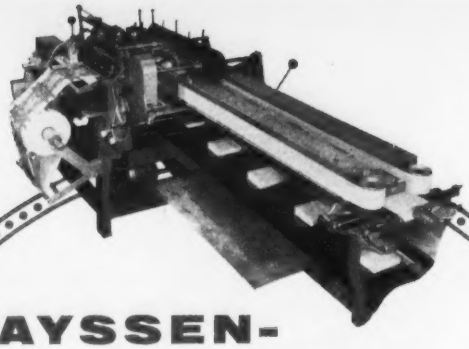

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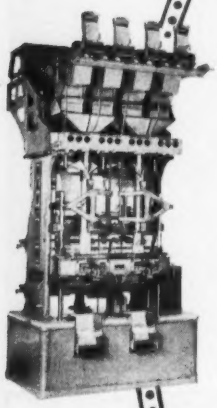

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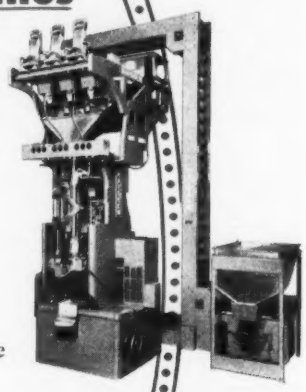

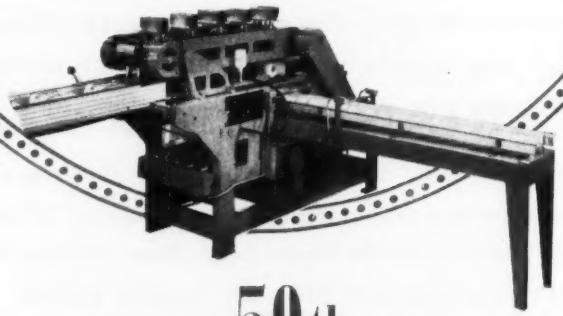

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conventions and exhibits

Feb. 13-15. Institute of American Poultry Industries, 30th annual fact finding conference, Municipal Auditorium, Kansas City, Mo.

Feb. 21-24. National Canners Assn. (and Canning Machinery and Supplies Assn.), 52nd annual convention, Hotel Conrad Hilton, Chicago, Ill.

Feb. 25-28. Canned Goods Shippers Conference, Hollywood Beach Hotel, Hollywood, Fla.

Feb. 26-27. Seventh Annual National Dairy Engineering Conference, Kellogg Center, Michigan State University, East Lansing, Mich.

Mar. 1-5. National Assn. of Frozen Food Packers, annual convention, Hotel Conrad Hilton, Chicago, Ill.

Mar. 31-*Apr.* 2. Research and Development Associates, QM Food & Container Institute, annual meeting, Hotel Statler, Washington, D.C.

Apr. 6-10. Atomic Industrial Forum, AtomFair, held in conjunction with Nuclear Congress, Public Auditorium, Cleveland, Ohio.

Apr. 13-17. American Management Assn., 28th national packaging show and concurrent packaging conference, International Amphitheatre and Palmer House, Chicago, Illinois.

Apr. 20-22. American Oil Chemists' Society, spring meeting, Roosevelt Hotel, New Orleans, La.

May 3-7. American Assn. of Cereal Chemists, Hotel Statler, Washington, D.C.

June 8-10. Grocery Manufacturers of America, Inc., annual convention, The Greenbrier, White Sulphur Springs, W. Va.

June 9-13. Inter-American Food Institute, Second Inter-American Food Congress, Carillon Hotel, Miami.

June 13-28. International Food Exposition, Palais de Beaulieu, Lausanne, Switzerland.

food regulations

Industry meets with HEW Secretary and

Attacks FDA Standards of Identity

FDA's standards-making program got politely blasted by industry spokesmen at recent meetings with Secretary of Health, Education and Welfare, Arthur S. Flemming.

Charles Wesley Dunn, president of the Food Law Institute, led off the first meeting by coming out for an amended law to limit FDA's control to basic ingredients — with use of optional ingredients entirely up to the manufacturers, and not subject to standardization.

H. T. Austern, counsel for the National Canners Association, wouldn't go quite that far. He did call, however, for a re-examination of the entire food standards program in the face of a "marked degree of apathy" on the industry side.

Mr. Austern came up with some specific suggestions for giving the program new momentum:

Realistic budgetary needs must be acknowledged. The inadequacy of FDA's budget discourages food groups from seeking standards. Unless new funds are obtained the standards program should be abandoned and existing standards abrogated, according to Mr. Austern.

There is a lack of flexibility in dealing with proposed new amendments to standards. This should be corrected.

New technological developments should receive prompter recognition.

Operating criteria should be given a searching re-examination.

The administrative processes should be speeded up.

At another of the Secretary's meetings, Attorney Michael F. Markel made a plea for a standards program that would give food manufacturers more leeway for experimentation.

The several meetings held by HEW Secretary Flemming pointed up recurring problems in the industry — some of these will be discussed in future columns.

For a detailed discussion of the issues involved, the reader is referred to the series of articles published in Food Processsing on "Unshackling Food Improvements." For a free copy of a 20 page reprint on this subject circle 6102 on Reader Service Slip.

Coal tar colors must be completely harmless

The recent Supreme Court decision upholding FDA's interpretation of the law on coal-tar colors — that such colors can be certified only if completely harmless regardless of the quantity used — points up more than ever the need for a new color law.

(The Food Additives Amendment of 1958 did not amend the section of the FD&C Act of 1938 dealing with Coal Tar Colors.)

The high court was called upon to resolve two conflicting decisions involving FDA's scope in testing and certifying colors. The Second Circuit Court of Appeals upheld FDA's no-tolerance interpretation. A contrary decision in the Fifth Circuit Court held that FDA had authority to certify colors as safe if they are harmless in the amount normally used.

The Supreme Court ruled in favor of FDA. The practical outcome of the case is that after March 1, "Red 32" will be banned as a coloring for oranges (the March 1 date still held after the court decision because of existing special legislation).

In the wake of the deadline

(*Continued on next page*)

DAY

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BULLETIN 574—12 pages, describes horizontal and vertical storage tanks. Points out savings and is filled with photos of various installations plus description of auxiliary equipment.

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food regulations

(*Continued from preceding page*)

date — and with citrus growers facing the problem of how to color later-harvested oranges — Senator Spessard Holland (D., Fla.) will try to get a bill rushed through Congress early this session authorizing a new color, "Citrus Red No. 2," for use on oranges.

This color, developed by American Cyanamid Company, has been subjected to thorough testing. A no-effect level has been established on rats and dogs.

According to FDA, no such data was available for Red 32, and every level tested produced some effect.

An understanding has been reached between FDA and Senator Holland that the Administration will not oppose this legislation. What FDA will agree to is legislation granting authority to them to fix a tolerance for use of this color on oranges during the present session of Congress. Senator Holland's bill is intended to be special and temporary.

Seek new color legislation

Both FDA and industry are hoping for a comprehensive color law to come out of this Congress which will make further special legislation unnecessary. While not in agreement on all facets of legislation on color, both are in agreement that a new liberal color law with tolerance-setting provisions is urgently needed.

Subsequently, on January 13, the FDA issued an official statement of policy regarding coal-tar colors. Whenever FDA secures evidence that a coal-tar color is not harmless when consumed without restriction, it must be removed from the permitted list.

FDA must do this even though the evidence also points conclusively to the fact that the coal-tar color in question would be harmless if used in specified maximum quantities. As a result, four more yellow coal-tar colors will be taken off the permitted list by April 19.

(*Continued on page* 12)

Plants, Companies, Personalities

Hunt Foods and Industries, Inc.

Fullerton, Calif., is bringing into one corporate structure these subsidiary and associated companies: Hunt Foods, Inc.; United Can & Glass Company; Hunt Foods, Inc. of Utah; Hunt Foods of Ohio Inc.; Hunt Foods New Jersey, Inc.; Advance Realty Corp.; Canner's Fruit and Vegetable Exchange; California Sea Food Corp. and Midlands Chemical Company.

Continental Baking Company

directors, and those of Omar, Inc. have agreed on the purchase of Omar by Continental for cash, at about $25 per share, subject to expected approval of Omar stockholders. Omar's 1957 sales were $39,176,201; Continental's $307,876,750.

Monsanto Chemical Company

has geared itself for a possible 75 per cent future expansion of its research effort on new chemicals for farming with its new Agricultural Research Laboratory now in operation at the company's headquarters' site in suburban St. Louis. Chemicals marketed for control of crop pests now add up to an annual $300 million industry in the US.

General Foods

White Plains, N. Y., has given two vice presidents new assignments in the international area. George D. Bryson now fills the newly created position of vice president, planning international development. James P. Delafield, formerly vice president in charge of sales and customer services, succeeds Mr. Bryson as vice president in charge of the international division.

(*More on page* 13)

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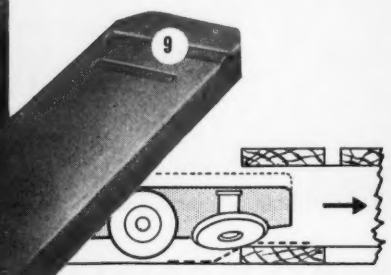
7. **Automotive, cantilever-type drive wheel** mountings—wheel may be removed with truck in normal operating position, without dismantling any part of transmission.
8. Excellent **maneuverability,** with compact design and short-coupled wheel base.



9. **"Flying Saucer" pallet wheels** position forks into pallets with unequaled ease. Handle empty, unchamfered pallets as easy as loaded ones.
10. **Single-package hydraulic unit** encases motor, pump, operating valves and reservoir into one compact assembly. Built-in strainer keeps out dirt.

Take it apart...see why this new Palletox "ticks" so well

Here's the first really new concept in walkie pallet trucks in years—Barrett's electric Lo-Lift Model PXG. Look at it carefully—inside and out. Then you see why your best buy is Barrett.

BARRETT-CRAVENS COMPANY
652 Dundee Road • Northbrook, Illinois

Representatives in All Principal Cities
Canadian Licensee: S. A. Armstrong, Ltd., Toronto, Canada

Barrett Handling Equipment

BARRETT

MATERIALS HANDLING ENGINEERS FOR HALF A CENTURY

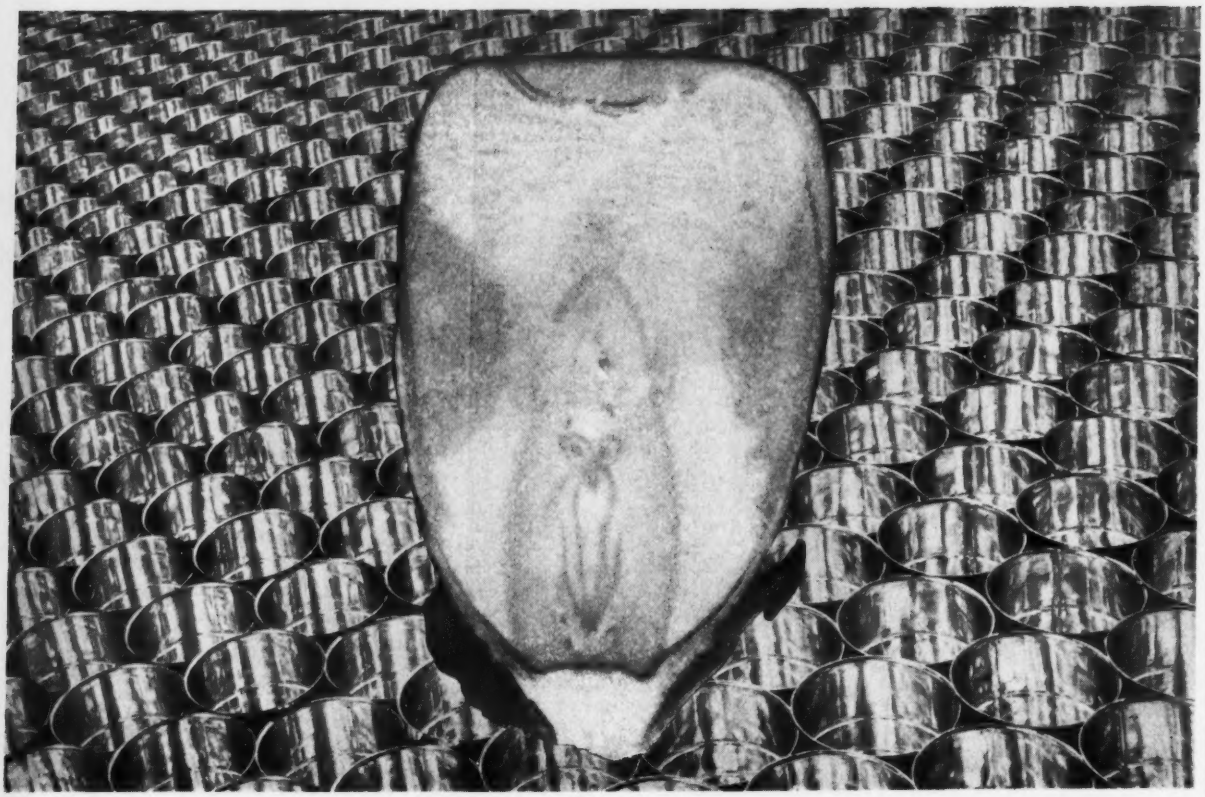
For *all* the details, send handy coupon for new Model PXG Palletox Bulletin.

Barrett-Cravens Company
652 Dundee Road, Northbrook, Illinois

☐ Please send me Model PXG Palletox Bulletin No. 587
☐ Please arrange a showing of the new motion picture, "New Horizons in Material Handling"

Name ..... Title .....
Company .....
Address .....
City ..... Zone ..... State .....

SPECIAL STARCHES



for Special Effects in Canned Foods

Special Starches from National simply stabilize or thicken. Nothing else! As stabilizers they never cloud color, never mask flavor. As thickeners they maintain viscosity characteristics even after extended storage. The result is these six special effects:

- Full Natural Color
- Full Flavor
- Smooth Creamy Flow
- Uniform Viscosity
- Shelf Life Stability
- Breakdown Resistance

These unusual starches are refined from corn, amioca or tapioca. They improve canned foods that range from soup to dessert. We'd like to show you how. Just write, including a description of your product or problem.

National
STARCH PRODUCTS INC.

750 Third Avenue, New York 17 • 3641 So. Washtenaw Avenue, Chicago 32 • 735 Battery Street, San Francisco 11

6106 on Reader Service Slip

(*Continued from page* 10)

List of 118 Safe Additives, approved by the FDA, will be supplied without charge as a service to the readers of FOOD PROCESSING. For your copy simply circle 6107.

FDA reports on exempt list for additives

FDA told FOOD PROCESSING that mail received so far as a result of publication of food additive regulations has presented no "knotty" problems. Often the difficulties are semantic ones, and can be explained easily enough. Letters dealing specifically with the exempt list in many cases simply cite chemicals left off which FDA felt too common to include.

In those cases where additions to the list are suggested, FDA is studying and answering such letters as quickly as possible.

Also under consideration by FDA is a list of flavoring substances to be added to the exempt list. When the list of 118 chemicals not covered by the law was originally released (FOOD PROCESSING, January 1959), it included no flavoring substances. The reason — a suggested list had not as yet been submitted by the flavor manufacturers.

If you are an additive manufacturer and you are planning to petition FDA for clearance of a product, make sure your information is as complete at possible. Out of the first ten petitions received only two have been filled. Eight are being held up because more information is required.

Cheap frozen eggs under suspicion of FDA

Bakers — beware of bargains in frozen eggs. FDA wants to caution food processors, especially in the baking industry, against suspiciously cheap frozen eggs. These products may be 18-day incubator-re-

(*Continued on page* 14)

Plants, Companies, Personalities

Borden Company

has broken ground for the largest and most modern combined milk and ice cream plant ever built in Wisconsin. The $1,750,000, 100,000 sq ft, one-story structure will be located on 14-acre tract just west of Milwaukee.

Roy E. Webb

has joined van Ameringen-Haebler, Inc., manufacturer of flavoring materials, and will be responsible for process development and pilot laboratory operations.

Edward Feigon

has been elected vice president in charge of research and development for Kitchen Art Foods, Inc., makers of Py-O-My baking mixes.

National Tea Co.

has elected George Houston vice president of operations.

Hunt Foods and Industries, Inc.

has named J. A. Skogstrom to position of manager, Procurement and Research Division, a new division which brings together the company's purchasing, research and development functions.

John R. Thompson Company

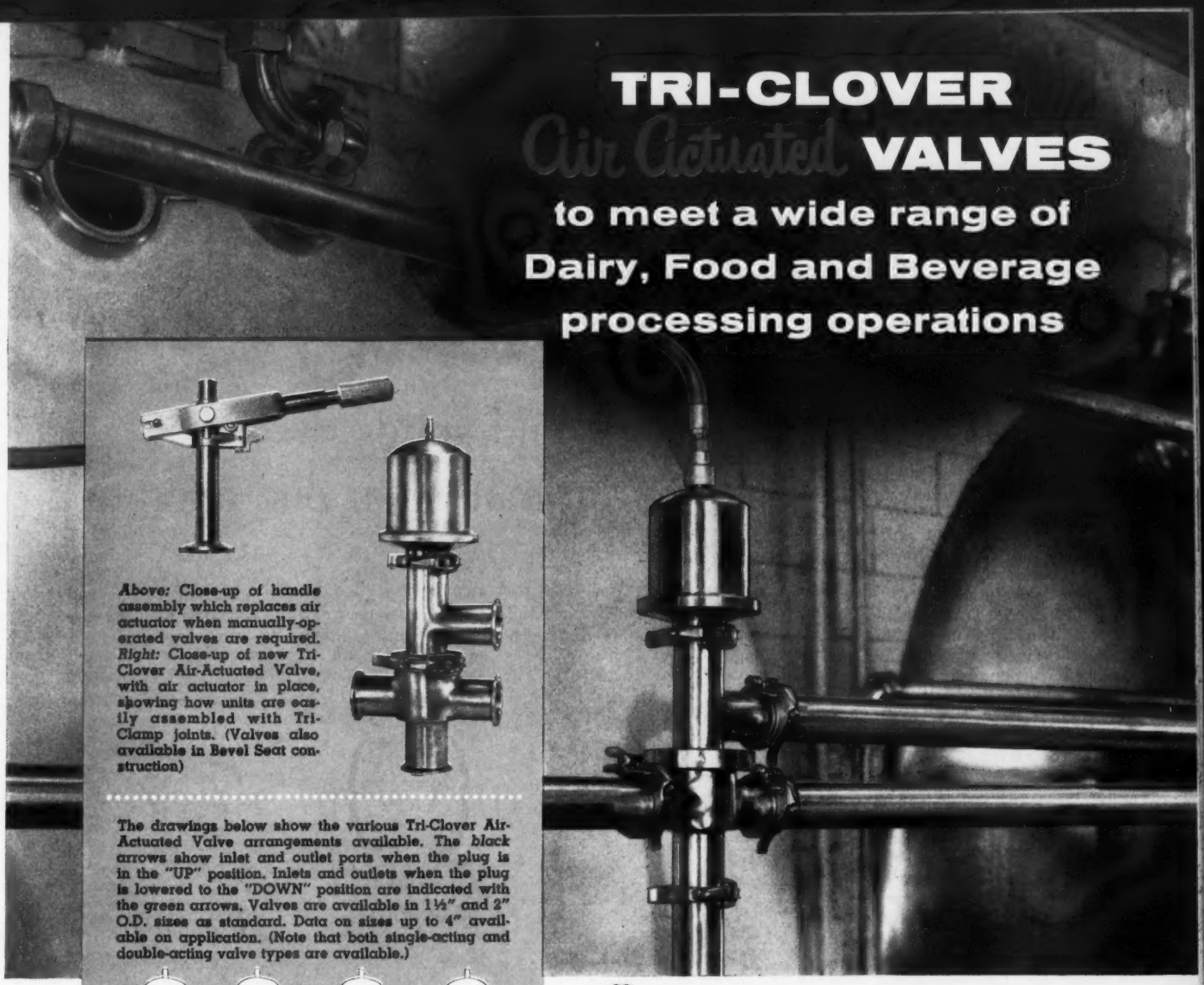
Chicago, manufacturers of "Holloway House" brand of frozen foods, has acquired new frozen food processing facilities at Lafayette, Ind. New plant will quadruple company's frozen food production facilities, until now concentrated in its Chicago plant.

(*More on page* 20)

For more information on product at right, circle 6108 see information request blank opposite last page.

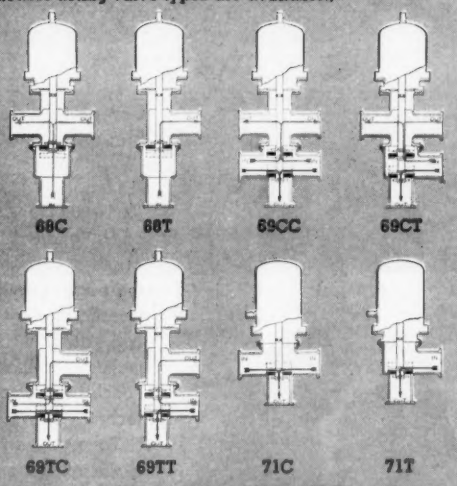
TRI-CLOVER Air Actuated VALVES

to meet a wide range of Dairy, Food and Beverage processing operations



Above: Close-up of handle assembly which replaces air actuator when manually-operated valves are required. *Right:* Close-up of new Tri-Clover Air-Actuated Valve, with air actuator in place, showing how units are easily assembled with Tri-Clamp joints. (Valves also available in Bevel Seat construction)

The drawings below show the various Tri-Clover Air-Actuated Valve arrangements available. The *black* arrows show inlet and outlet ports when the plug is in the "UP" position. Inlets and outlets when the plug is lowered to the "DOWN" position are indicated with the green arrows. Valves are available in 1½" and 2" O.D. sizes as standard. Data on sizes up to 4" available on application. (Note that both single-acting and double-acting valve types are available.)



Tri-Clover Division's Air-Actuated Sanitary Valves permit easy application of automation and automatic control to many phases of processing and cleaning operations in the dairy, food, and beverage industries. These efficient, air-actuated valves can be locally controlled . . . or remote-controlled from any plant area. Advanced design makes them ideal for use in completely automated installation, such as recirculation operations for in-place cleaning . . . or in a single operation, such as on a filling machine. Manufactured from type 304 stainless steel, these efficient, remote-controlled valves offer fast, positive liquid flow control in any line location, with accurate local or remote control.

Built to extremely high sanitary standards, Tri-Clover Air-Actuated Sanitary Valves assure maximum uninterrupted flow, with a minimum of agitation and friction.

For full details, write for Bulletin A-658, or see your nearest Tri-Clover Distributor.

TRI-CLOVER

LADISH CO.
Tri-Clover Division
Kenosha Wisconsin

IN CANADA: Brantford, Ontario
EXPORT DEPT.: 8 South Michigan Ave., Chicago 3, U. S. A. Cable: TRICLO, Chicago

SEE OUR EXHIBIT AT THE 1959 CANNER'S SHOW

S-858

(*Continued from page* 12)

jects, unsuitable for food and considered adulterated under the law.

Traffic in incubator-reject eggs is nothing new, but FDA told FOOD PROCESSING it has only recently become aware of the magnitude of the racket. In many cases the traffic is carried on by people with criminal records, in clandestine, black-market fashion.

Eggs are purchased from hatcheries at $2-2.50 per case, usually picked up at night and transported to unmarked processing plants. In these plants preservatives are applied to the eggs to disguise their condition, they are mixed with good eggs, and frozen — to be sold to processors usually at 10 per cent below market.

To make the FDA's job of finding them even more difficult, racketeers use dummy corporations, phony addresses, aliases, and no-record cash transactions.

In this way, some 3 million pounds of incubator-reject eggs reach the food market annually.

FDA warned the hatchery industry and egg dealers last September that incubator-rejects would be considered as adulterated if not denatured. Simply crushing the eggs is not sufficient — kerosene, creolin and such products must be used for the denaturing process.

Then these eggs can be sold legitimately to tanners or others for nonfood purposes.

According to FDA a number of legal actions are now "in the works" and efforts are being stepped up to apprehend those involved in the incubator-reject racket.

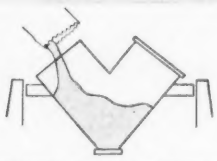
We welcome comments and further information on articles published in FOOD PROCESSING. Submit your views to: Editor; FOOD PROCESSING, 111 E. Delaware Pl., Chicago 11, Ill.

ENTIRELY NEW PRINCIPLE enables you to...

Blend liquids and solids intimately in one operation

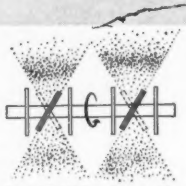
It is now practical, with the P-K "Twin-Shell"* blender, to blend many difficult formulations that have heretofore been either impossible or impractical because of the number of separate operations required to achieve a desired product. With the new "Twin-Shell" blender, liquids, solids, clumpy and crystalline materials can all be intimately blended in one operation. Average blending time: 5 to 15 minutes. The P-K "Twin-Shell" blender is unlike any other blender. It works on an entirely new blending principle. Here, in diagram, is how it works.

*Patented

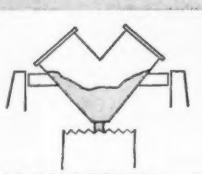


CHARGE DRY SOLIDS through top of either shell. Optimum charge level for most materials is about 65% of total shell volume.

TUMBLE AND AERATE. As shell revolves, rapidly spinning wire cage intensifier breaks up agglomerates, literally creates dust storm in material.



ADD LIQUID. Centrifugal force sprays atomized liquids from periphery of control discs on Liquid-Feed Bar into finely dispersed solids.



DISCHARGE PRODUCT easily through apex of shells. Accessibility of interior and easy removal of Liquid-Feed Bar speed cleaning.

Get new ideas for your blending process at P-K's pre-test lab

Complete, scientific investigation of all types of blenders now available at Patterson-Kelley.

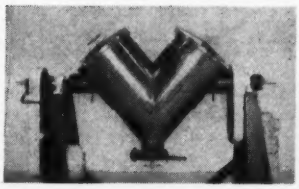
Blending of complex formulations is full of variables. The equipment and procedure that are ideal for one combination of ingredients may be unsatisfactory for another. Proper selection of equipment demands thorough scientific investigation. You can conduct your investigation at Patterson-Kelley's Customer Pre-Test Lab, at East Stroudsburg, Pennsylvania. Since P-K makes practically all types of blenders, you can run conclusive comparison tests with your materials. Trained technicians will help you.

To set up an appointment, just place a collect call to Russell Dotter at Patterson-Kelley. Tel. No.: Stroudsburg 820. He'll be happy to tell you how much of your materials to bring and to give you other details. East Stroudsburg, in the Pocono Mountains, is just 2 hours from New York City, easily accessible by all carriers.

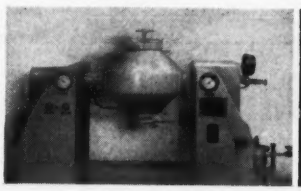
PROBLEM: to blend:—precisely—varying amounts of
lumpy solids, powders, crystalline materials and small amounts of liquid.

SOLUTION: Charge materials to P-K
"Twin-Shell" Liquid-Solids Blender. Press start button.

"TWIN-SHELL" Liquid-Solids laboratory models are made in transparent Lucite or stainless steel, in 8 and 16 quart sizes.



PRODUCTION MODELS of the "Twin-Shell" blender range up to 50 cu. ft. capacity. (Intensifier and Liquid-Feed Bar optional.)



VACUUM TUMBLE DRYERS by Patterson-Kelley are avaliable in sizes down to the standard 1 cu. ft. capacity lab model.

PRODUCTION MODELS of the Vacuum Tumble Drier have capacities up to 150 cu. ft., come factory aligned, piped, instrumented.

BLENDER LITERATURE. Specialized information and data in greater detail are given in two Patterson-Kelley publications: Bulletin No. 16, Chemical Process Equipment and Bulletin No. 15A-1, Twin-Shell Laboratory Blenders. Write for your copies today. Patterson-Kelley Company, Chemical and Process Equipment Division, 1602 Hanson St., East Stroudsburg, Pa.

Patterson Kelley

Chemical and Process Equipment Division

15

6109 on Reader Service Slip

On trial —
Bacteriological warfare against food-crop pests

Marketing of food and feed crops that are treated with a microbial pesticide, *Bacillus thuringiensis Berliner*, will be permitted under a temporary exemption from the requirement of an FDA tolerance.

Referring to the new pesticide as a possible useful "bacteriological warfare" agent against certain insects, FDA Commissioner George Larrick pointed out that the FDA exemption provides authorization for the first time to apply this type of pesticide directly to food crops.

Before clearing use of the new microbial pesticide under the Pesticide Amendment, FDA required the manufacturer to provide scientific data showing safety for the proposed use.

The substance will be applied as a dust or spray to protect crops against insect pests including cabbage looper, imported cabbage worm, alfalfa caterpillar, and certain other moth-type insects that, in the worm stage of growth, feed on and destroy crops.

During the year's trial period requested by the manufacturer (Pacific Yeast Products, Inc., Wasco, California), FDA will observe the action of the pesticide. "If no question arises and the produce proves useful and practicable, the manufacturer may ask clearance for general commerical use," FDA said.

Temporary exemptions in poultry products inspection

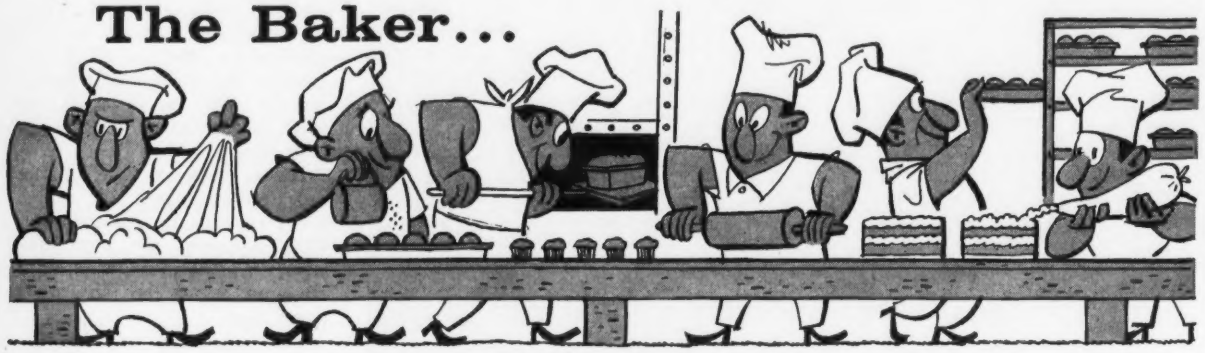
USDA has announced amendments to inspection regulations under terms of the now effective Poultry Products Inspection Act.

New sections in the amended regulations provide for the exemption of certain poultry processing operations from continuous resident inspection; set forth record-keeping requirements; contain provisions governing the inspection of

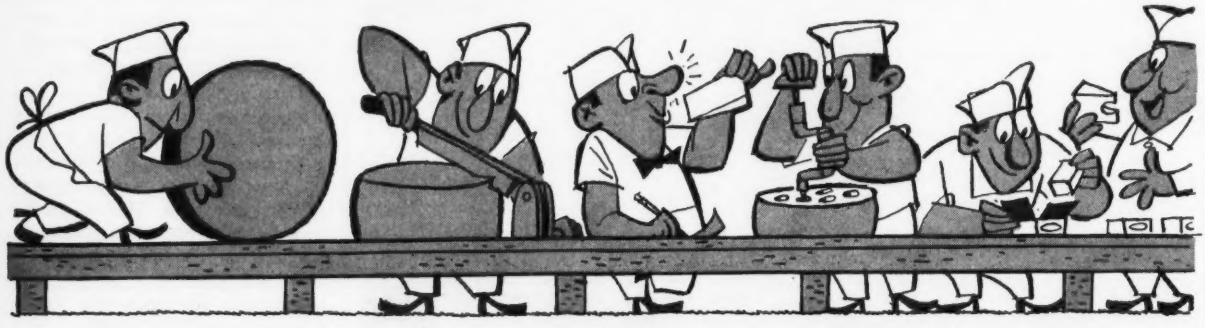
(*Continued on next page*)

The Butcher...

The Baker...



and Champion Cheese Maker...



PREFER THE PURITY OF Diamond "Flake" Salt

• In meat packing, baking, the making of dairy products or the processing of any fine foods, you probably take high quality suppliers for granted. You can—with Diamond Crystal.

The high uniform purity (99.95%) of Diamond "Flake" assures true salt flavor. And it is quickly soluble to bring out the best in your products.

If you have a salt problem—call The Man from Diamond Crystal. He has the facts, the proof—and the service.

Diamond Crystal Salt Co.

Akron, Ohio • St. Clair, Mich. • Jefferson Island, La.

6110 on Reader Service Slip

(*Continued from preceding page*)

poultry products offered for importation; set forth procedure for approval of compounds used in official establishments; change the basis of establishing the work week of processing plants by not requiring that exact hours of daily operations be specified; and redefine ready-to-cook poultry to permit wholesome kidneys to remain in the eviscerated bird.

Exemptions for certain "further" processing operations have been provided in the amended regulations. The period of exemption, however, will not extend beyond July 1, 1960, and may be terminated at any time that it becomes practicable to provide inspection for such processing operations.

Included in the category of "further" processing operations are: canning of poultry products, preparation of poultry food products such as poultry pies, dinners, soup bases, ready-to-heat-and-serve items and similar products.

The regulations provide, however, that such operations are exempted only from the continuous inspection requirement. All other provisions of the regulations are applicable.

Inspection continued

The voluntary poultry inspection service provided under the Agricultural Marketing Act will be continued and processors of exempted products may wish to avail themselves of this program to secure the mark of inspection on the products they produce that are exempted from the compulsory inspection program.

During the period of exemptions from the act, the same circle inspection mark will be permitted to be used on products inspected under either the voluntary or mandatory program.

Copies of the amended regulations may be obtained from the Poultry Division, Agricultural Marketing Service, Washington 25, D.C. All inquiries concerning the inspection program should be directed there as well.

PRODUCTS AND PACKAGES

This Month's Best . . .

Foil portion-packet . . .

. . . keeps ketchup quality, appearance, flavor for months without artificial preservatives (against Heinz policy). Half-oz package consists of three layers — polyethylene on inside, aluminum foil in middle, transparent glassine. Ketchup is packed and sealed at 200° F. The polyethylene gives completely satisfactory seal, and the glassine-laminated foil, unlike transparent plastic envelopes, will not leak micro quantities of oxygen which causes quality loss. Biggest convenience demand is expected from airlines, railroads, drive-ins, hospitals, cafeterias, fast-food counters. H. J. Heinz Company, 1062 Progress St. N.S., Pittsburgh, Pa.

Pudding dish takes cake . . .

. . . as it comes warm from the oven. New Pillsbury dessert, baked like cake and eaten like pudding, comes ready-mixed in two special pouches. One, a special laminate of pouch paper and foil, contains batter mix. The other, of poly-coated pouch paper, holds a sauce mix. Housewife blends contents of each pouch with water, pours the sauce over the batter and bakes them together. Result is a delicious chocolate sauce covered cake, served warm in pudding dish. Printed material for pouches supplied by Riegel Paper Corporation, 260 Madison Ave., New York 16, N.Y.

Little lugs lock lid . . .

. . . making new container the first reclosable lock-tight key-opened can. Five lugs extend from inside of recessed can top and fit into small depressions in collar of can. The fittings are located about ¼-in. below can top. A lock-tight reclosure is provided by pressing lid into top of can and giving a quarter-turn clockwise. Container was developed for the Quaker Oats Company for export use by American Can Company, 100 Park Ave., New York 17, N.Y.

New-twist salt seller . . .

. . . is first large package with both shaking and pouring features in single, easy-to-use top. Paper canister has round, copper-colored styrene plastic top that seats a turning dredge. Latter contains 10 small shaker holes on one side and large pouring hole opposite. Thus, 180° twist converts container from "shake" to "pour," eliminates need to fill small table shaker to safely sprinkle salt. Sixteen-oz size (compared with standard 26-oz retail package) answers need for both kitchen and outdoor barbecue convenience. American Can Company, 100 Park Ave., New York 17, N.Y., developed "Shake 'N Pour" package for International Salt Company's Sterling salt.

FLUIDICS

is a Pfaudler Permutit program providing
the know-how
the equipment
and the experience
for solving problems involving fluids.

FLUIDICS covers such varied phases of fluid handling and control as:

blending
evaporation
distillation
drying
filling
heat exchange
storing
centrifuging
agitation
water treatment
waste treatment
corrosioneering
metering

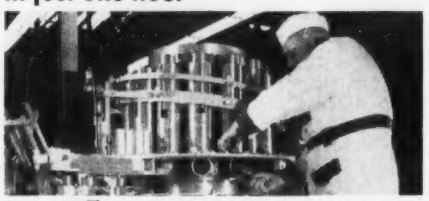
Whenever you have a fluid-handling problem, look to this Pfaudler Permutit FLUIDICS program for the best solution.

PFAUDLER PERMUTIT INC.

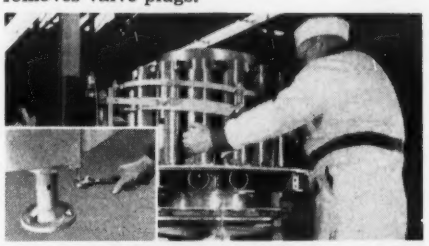
Specialists in FLUIDICS . . . the science of fluid processes

FLUIDICS AT WORK

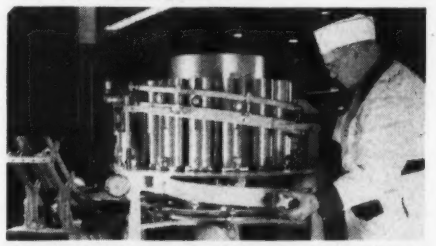
. . . New filler changes can height in just one hour



Save 80% on change-over time with new Pfaudler RP-214 rotary piston filler. Bowl and cam ring stay put. Operator raises piston, removes valve plugs.



Just turn bowl to new height. Spacer ring adjusts automatically. Piston and valve cam tracks are set by adjustable support leg screws (see inset photo).



One hour later valve plugs are replaced and pistons are lowered into position. Operator closes valve cam ring access door and the machine is ready to go.

Other features: ±1/10 fluid oz. accuracy. Speeds up to 400 cans/minute. No container —no fill mechanism; air operated for faster response and less maintenance. Just 30 minutes to clean. Only four primary wearing parts. Write to our Pfaudler Div., Dept. FP-29, Rochester 3, N. Y., for Bulletin 973. *And see it at the Canners Show, Booth 34.*

75 YEARS CREATING FOR TOMORROW Pfaudler

6111 on Reader Service Slip

The case of the dry milk that put body and soul in a soup mix

A manufacturer of soup mixes had succeeded in capturing all the elusive subtleties of a kettle-brewed broth. And was still discontent.

He had envisioned a hearty soup, irreverently lusty, a soup of manly substance. Subtleties be hanged if need be.

Quite rightly he reasoned that a dry milk of unusually high viscosity might provide the needed body, impart the lacking soul. Could Land O'Lakes supply it?

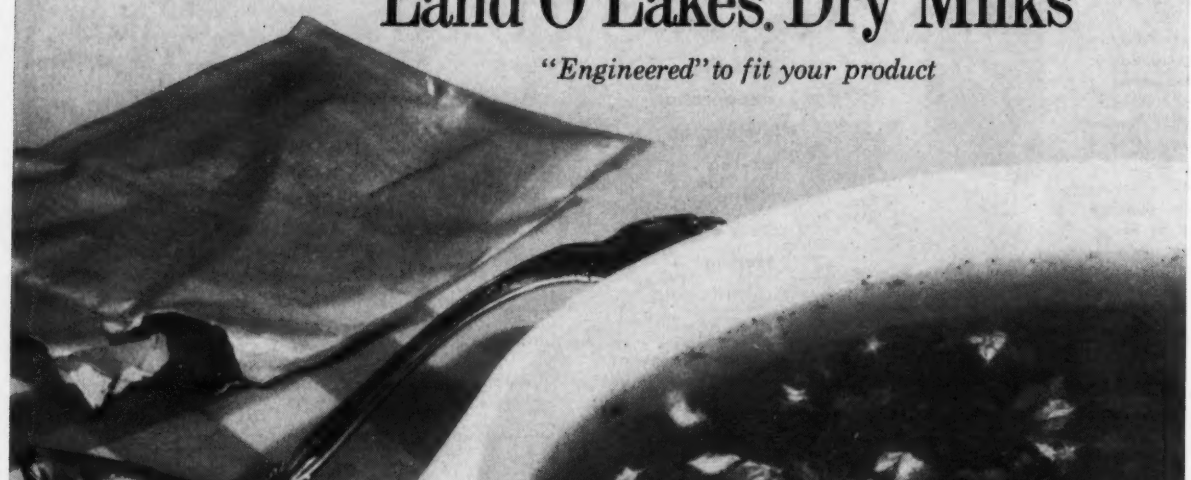
Land O'Lakes could and did. From the Land O'Lakes developmental laboratories, where tailoring dry milk to order is a dedicated daily business, came a dry milk with a viscosity that was nothing short of sheer brawn. And what it did for the soup was nothing short of sudden transmutation. You may taste it one day soon.

Voila! It is soup with body, it is soup with soul!

You, too, may process a product that can benefit from one or more of our dry milks. If we haven't the precise one you need, we can *create* it. Write us. Land O'Lakes Creameries, Inc., Minneapolis 13, Minn.

Land O'Lakes Dry Milks

"Engineered" to fit your product



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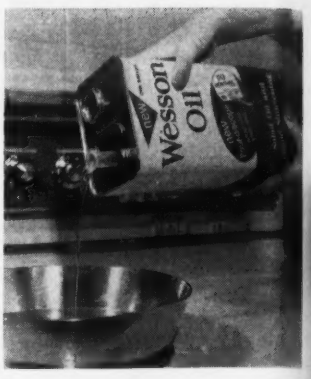
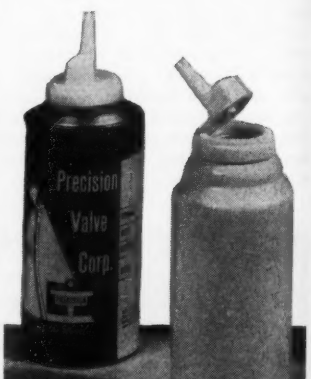


Spill-proof pull-out spout . . .

. . . of flexible plastic pulls out of gallon can to guide flow of Wesson Oil. Extra convenience feature is reclosable vent in top. Circular, plastic disc, with air hole, rotates to cover vent hole punched with ice pick. Vent facilitates smoother pouring. Resealing preserves product freshness. "Pour-o-scope" spout was designed by American Can Company, 100 Park Ave., New York 17, N.Y.



Hinged spout cleans quick . . .

. . . and valve too, after each use, with just swish under the faucet, without having to remove spout from container. Especially designed for toppings and foam products, new "upside-down" spout and valve assembly is in same price range as current assemblies — is shown here mounted on 6-oz side-seam can (left) and 6-oz seamless can (right). Precision Valve Corporation, 700 Nepperhan Ave., Yonkers, N.Y.

PRODUCTS AND PACKAGES

This Month's Best . . .

Foil keeps butter better . . .

. . . also ice cream and other dairy foods, eliminating loss of moisture, loss of bulk, odor absorption and deterioration of flavor and texture. Thermal conductivity properties keep ice cream as much as 9° colder in freezer. New line of packages includes ice cream cartons with foil on outside or on both sides (for easy content removal), foil-laminated butter carton and the "Clo-Can" for cottage cheese and other dairy products. Last-named is three-part package (carton, foil liner and foil overwrap) integrated into a single wall, bonded by micro-crystalline wax under heat and pressure. Reynolds Metals Company, Richmond 18, Va.

Cheddar-type spread cuts calories . . .

. . . from usual 100-125 per oz to a mere 55. Empire Imitation Pasteurized Process Cheese Spread, in two-lb loaves, has cheddar as its primary base. But fat content has been reduced one-half, and milk minerals built up. Recommended for sandwiches, shredding over salads, serving on picks, etc., product should be stored in refrigerator, served at room temp. Pauly Cheese Co., Green Bay, Wis., subsidiary of Swift and Company, Union Stock Yards, Chicago 9, Ill.

Colorful coverage . . .

. . . for cottage cheese is provided by pictorial metal lids which feature life-like product lithography in full color. Pineapple, Strawberry, Cottage Cheese Salad (shown) are among stock designs available. Sizes include the 8F lid for 8-oz squat, 12- and 16-oz semi-squat containers; 12F for 12-oz squat; 16F for 16-oz squat and 32-oz semi-squat. Physical features include increased capping speed, double seal locking, tamper-proof closure, more rigid package. Paper Container Div. of Continental Can Company, 100 E. 42nd St., New York 17, N.Y.

Quick-bake Pudding Cake . . .

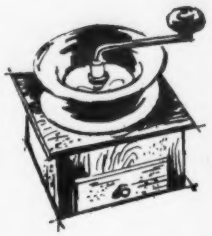
. . . combines warm, moist cake and pudding. In chocolate fudge or lemon flavors, new Betty Crocker product takes less than five min to prepare, only 20 min in oven. General Mills, Inc., 9200 Wayzata Blvd., Minneapolis 26, Minn.

Frozen pigs-in-blankets . . .

. . . Li'l Po'ks, consisting of ground and seasoned pork and veal wrapped in a crusty blanket, has been introduced nationally by West Shore Products, Inc., Holland, Mich. The pigs-in-blankets — ten to the 8-oz package — are for parties, luncheons, TV snacks and picnics. Printed design on carton front shows product-as-served in full color. Cartons by Boxboard & Folding Carton Division of Continental Can Company, 100 E. 42nd St., New York 17, N.Y.

Reg. U.S. Pat. Office

ENTRAPPED POWDERED SPICE FLAVORS by FLORASYNTH



Florasynth was one of the first companies to manufacture powdered flavoring materials; and now makes available a new kind of soluble spice in powdered form—ENTRAPPED POWDERED SPICE FLAVORS which are manufactured and designed for use in industries such as Canners, Baked Goods, Cake Mix, Frozen Foods, Canned Meat, Sausage Manufacture, Meat Packers, Sauces, Soup Mixes, Salad Dressing, etc., and wherever dry powdered flavors can be used to good advantage.

ENTRAPPED POWDERED SPICE FLAVORS

1. Are made of special extractions of natural spices which possess all the flavoring qualities and characteristics of the natural spice.
2. Produce a uniform flavor time after time.
3. Give greater uniformity in production.
4. Are much more economical to use in manufacturing processes.
5. Are water soluble and instantly dispersible.
6. Are non-hygroscopic and free flowing.
7. Have a high degree of stability as compared to natural spices.
8. Are ready for immediate use.

BLACK PEPPER ENTRAPPED
CAPSICUM, AFRICAN ENTRAPPED (200,000 pungency)
CELERY, ENTRAPPED
CINNAMON, ENTRAPPED
GINGER, ENTRAPPED
NUTMEG, ENTRAPPED
PAPRIKA, ENTRAPPED (40,000 color)
SAGE, DALMATION ENTRAPPED
TURMERIC, ENTRAPPED

Other Entrapped Powdered Spice Flavors and Blends of Entrapped Powdered Spice Flavors available as required.

Samples and prices on Entrapped Powdered Spice Flavors upon request.

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For fresh-from-the-field **FLAVOR!**

GIVAUDAN IMITATION STRAWBERRY

Nothing compares with the flavor of fresh wild strawberries. And nothing has duplicated that flavor as closely as Givaudan's Imitation Strawberry!

It is economical—highly concentrated yet easy to use on a controlled level. And it's stable—ideal for use in milk-containing products as well as in confections, summer drink powders and other preparations. Available in liquid or crystal form. May we send you samples and more complete information?

Givaudan Flavors Inc.

321 West 44th Street
New York 36, N.Y.

6114 on Reader Service Slip

association news

American Chemical Society has chosen as president-elect **Dr. Albert L. Elder**, director of research of Corn Products Company, Argo, Ill. Dr. Elder, an authority on medicinal chemicals, proteins and starches, will head the Society in 1960, succeeding current president, Dr. John C. Bailar, Jr., professor of inorganic chemistry at the University of Illinois.

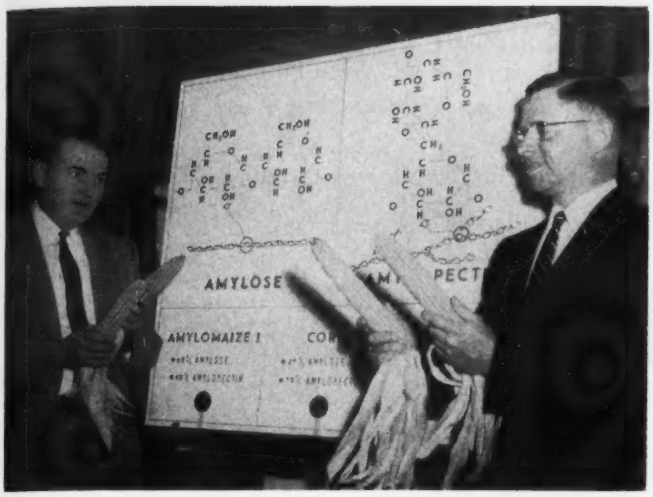
National Canners Association convention in Chicago will follow the successful pattern of recent years by featuring two luncheon meetings with technical programs. First of these, Saturday, Feb. 21, will be devoted to three major container topics: 1) an appraisal of aluminum cans from standpoints of both manufacture and use, 2) other developments in adaptation of containers to the industry's needs, and 3) external corrosion of canned foods in marine transportation. Second of the two luncheon meetings, Monday, Feb. 23, will consist of a "Canned Foods Problems Clinic," at which a panel of experts from the NCA Research Laboratories and the container companies will present topics for discussion.

American Meat Institute Foundation, Chicago, has elected **A. D. Donnell,** president of The Rath Packing Company, Waterloo, Iowa, board chairman. He is succeeded as vice chairman of the AMIF board by James D. Cooney, president of Wilson & Co., Inc., Chicago.

American Dry Milk Institute, Chicago, has promoted **John T. Walsh** from assistant director to director, succeeding Dr. B. W. Fairbanks, retired.

Brewing Industries Research Institute, Chicago, has appointed **Dr. George S. Bratton** scientific director. Dr. Bratton formerly was technical advisor to the president of Anheuser-Busch, Inc., and most recently served as consultant to companies allied with the brewing industry.

(*More on page 55*)



Drs. James W. Evans, left, director of research, American Maize, and C. G. Caldwell, director of research, National Starch hold new high-amylose corn. Chart shows structure of amylose (left) and amylopectin molecules

Amylomaize I—new type starch from new high-amylose corn makes semi-commercial debut as

Edible, water-soluble transparent film

It's completely digestible, needs no FDA clearance, need not be removed by housewife, resists greases, costs under other film-formers of same high strength

New film, derived from new type starch, promises to be long-sought answer to quest for food-coating material that is digestible, protective *and* low-cost.

Film already has shown strong potential as "wrapper" for frozen foods and frozen meats — will enable housewife to cook meals simply by dropping the "packaged" foods directly into cooking utensil. Since it is made from corn, film becomes completely digestible when dissolved.

New material is not envisioned as an overwrap. Therefore, in order to keep film clean and edible, it will be necessary to pack in a carton or to overwrap with more conventional packaging materials.

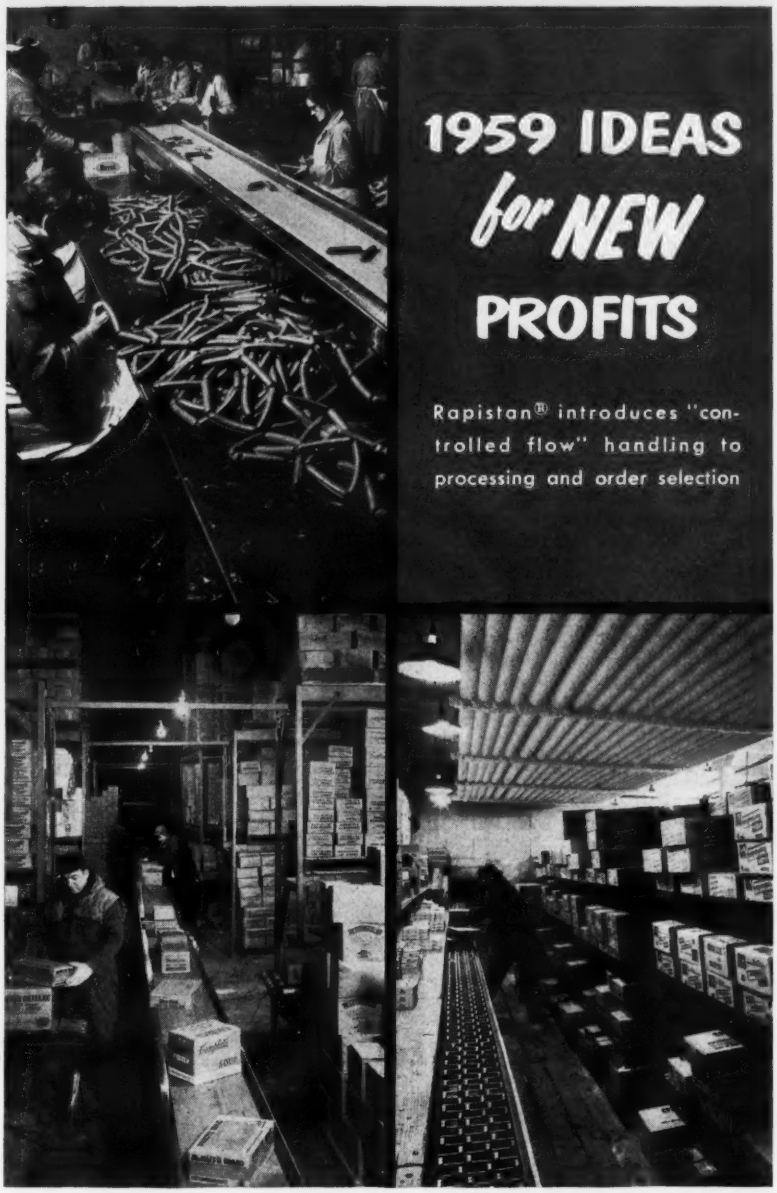
Other applications

Fresh fruits — apples, oranges, pears, grapes, etc., hard candies, bread and such specialty food items as candied taffy apples offer other good possibilities for food use.

In latter type application, it may be feasible to combine desired flavor — such as maple or chocolate — with starch coating before dipping food product.

Same starch, in non-water-soluble modifications, has a

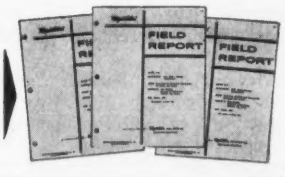
(*Continued on next page*)



New Rapistan handling ideas have been developed in "controlled flow" of merchandise, to improve processing and warehousing, and to speed order selection. If your profits need a boost, investigate these field-tested methods. Write today for our field reports and catalogs describing new uses of gravity and power conveyors and Flow Racks™.

1. Meat packer eliminates second shift
2. Food freezer gets inventory control
3. Meat processor handles more orders

Write for these



Rapistan®

The RAPIDS-STANDARD CO., Inc.
660 Rapistan Bldg., Grand Rapids 2, Mich.
offices in principal cities

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(*Continued from preceding page*)

future as a coating and surface treatment for paper and paper products.

Joint venture

Amylomaize I project is a dramatic demonstration of cooperative research accomplishment involving private enterprise and government.

Basic idea for a new, high-amylose corn was originated in 1953 by Robert P. Bear of Bear Hybrid Corn Company, Decatur, Ill.

To finance growing the new corn in sufficient acreage to make possible sizeable research quantities of high-amylose starch (upwards of 150,000 lb to be available within 30-60 days), Bear obtained the support of American Maize Products Company and National Starch Products, Inc.*

Another active participant in the investigations was Northern Utilization Research and Development Division, USDA, Peoria, Ill.

Resultant corn hybrid strain provides a starch that contains 55 per cent amylose — approximately twice as much as conventional corn starch.

The starch is made water soluble simply by heating in water in an autoclave to about 250°F.

Commercial outlook

Field planting of high amylose corn has yielded in excess of 100 bu per acre — a yield comparable to the best of regular corn belt hybrids.

Price is expected to be two-to-three times that of regular corn starch initially — should be brought down to one-and-one-half to two times such cost with increased produc-

*Previous joint research between the two vigorously competitive corn processors led to development of commercial waxy maize — at the opposite end of the scale from Amylomaize I, as former contains pure amylopectin.

Waxy maize (tapioca-type) now is an important commercial crop, and the resultant starch finds many specific applications in the food and industrial fields.

DOW | INSULATION

Birds Eye Zero-Storage Warehouse at Walla Walla, Washington

STYROFOAM® *cuts installation costs 10% at Birds Eye*

After careful study, Styrofoam* was chosen to insulate the floors, ceilings and walls of a zero-storage warehouse for Birds Eye Division of General Foods.

Over 500,000 board feet of Styrofoam were used. The choice of this plastic insulation material resulted in a 10% savings in insulation costs and, thus far, the complete absence of any vapor problems. Tests conducted by Birds Eye revealed that Styrofoam will preserve their food products for 48 hours after the ammonia has stopped circulating and that Styrofoam will insulate the ground from freezing for four to six weeks after the subfloor heating is turned off.

This is just one example of the many cold storage applications in which Styrofoam has provided economical and effective insulation. Because it has low heat transmission and unyielding resistance to moisture, Styrofoam has permanent insulation efficiency. Because it is lightweight, self-supporting and semi-flexible, it offers advantages in handling and installation. This was demonstrated at Birds Eye by the fact that Styrofoam was readily contoured to the curvature of the roof.

For more information about Styrofoam, contact the nearest Styrofoam distributor or write Plastics Sales Department 2226BH2.

*Dow's registered trademark for its expanded polystyrene.

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

Unyielding water resistance—

STYROFOAM®

for pipe covering insulation

Low-temperature pipe covering made of Styrofoam* does an excellent job and lasts a lifetime. Its unyielding resistance to moisture and its permanent low thermal conductivity prevent condensation and dripping—reduce heat transfer.

Styrofoam will not crack or split from changing temperature and it is not subject to ice buildup around valves. It's lightweight and easy to apply—requires no maintenance. A complete line of pipe and vessel covering made from Styrofoam is available from a number of fabricators. For their names and more information, write to THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Sales Department 1916N.

*STYROFOAM is a registered trademark of The Dow Chemical Company

DOW

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tion resulting from anticipated demand.

So far as food uses are concerned, National Starch and American Maize are conducting separate and independent laboratory activities.

The companies will provide experimental quantities of Amylomaize I for application development studies so that independent research work may be carried out concurrently with theirs.

For more information on Amylomaize I high-amylose starch, and edible, water-soluble transparent films produced from it, write direct to:

Dr. James W. Evans, director of research, American Maize Products Company, 113th St. and Indianapolis Blvd., Roby, Ind.

Dr. C. G. Caldwell, vice president — research, National Starch Products, Inc., 750 Third Ave., New York 17, New York.

"Where'd you say you'd picked potatoes before?"

NEXT MONTH —

Spotlight on Food Ingredients

Latest information, including Buyer's Guide to Nutritional additives for foods and feeds.

No matter who you are ...

the easiest way to get

cotton towels, uniforms & linens

is to call your Linen Supply Man!

You only call once to arrange for regular, dependable delivery of all your linen requirements. You get the luxury and quality of cotton cloth. (And, of course, there is no substitute for cloth.)
The nearest Linen Supplier is no further away than your telephone. Call today.

Note: No investment, no maintenance, no inventory. Everything is furnished and serviced by your linen supplier, at low cost, and tailored to your needs.

Linen Supply

ASSOCIATION OF AMERICA and National Cotton Council
22 W. MONROE ST., CHICAGO 3, ILL.

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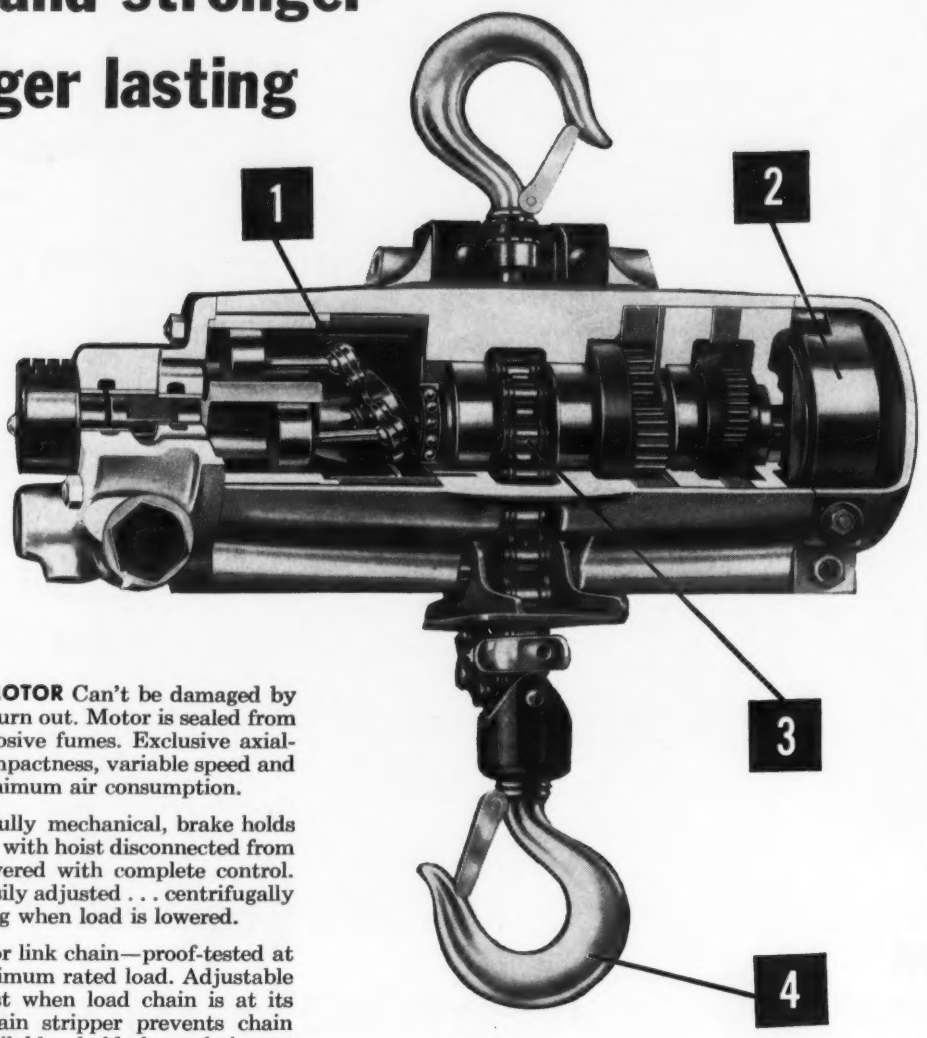
Why Gardner-Denver Air Hoists are safer and stronger —longer lasting



1. AXIAL-PISTON AIR MOTOR Can't be damaged by overload stalls . . . can't burn out. Motor is sealed from outside dirt, dust or corrosive fumes. Exclusive axial-piston design provides compactness, variable speed and maximum power with minimum air consumption.

2. POWERFUL BRAKE Fully mechanical, brake holds load in any position. Even with hoist disconnected from air line, load may be lowered with complete control. Brake is fully enclosed, easily adjusted . . . centrifugally governed to prevent racing when load is lowered.

3. LOAD CHAIN Roller or link chain—proof-tested at more than two times maximum rated load. Adjustable safety stops shut off hoist when load chain is at its maximum safe limit. Chain stripper prevents chain fouling. Chain basket available—holds long chain out of the way.

4. SAFETY HOOK Made of forged steel . . . ball-bearing-mounted for swiveling to accommodate load in any position. Safety latch prevents load from slipping off hook. Provision for secondary safety cable in upper hook boss.

Get the lift and the power and the speed you need—with *built-in* safety. Choose from Gardner-Denver's wide variety of lightweight, easy-to-use pneumatic hoists. Write for Bulletin 86.

Model	Capacity	Speed	Weight	Hook to hook
86-2V40	4000 lb.	10 f.p.m.	100 lb.	23½ in.
86-2V20	2000 lb.	19 f.p.m.	78 lb.	19½ in.
86-2V10	1000 lb.	38 f.p.m.	78 lb.	19½ in.
86-1V10	1000 lb.	19 f.p.m.	28 lb.	14 in.
86-1V5A	500 lb.	38 f.p.m.	28 lb.	14 in.
86-1V3	300 lb.	80 f.p.m.	28 lb.	14 in.
86A-1	150 lb.	45 f.p.m.	14 lb.	.....

EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

6118 on Reader Service Slip

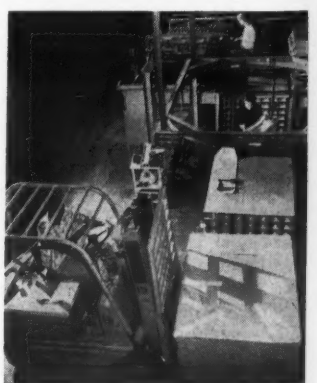
For other stories of special interest to canners this month see pages 41-45 and 73.

At world's largest processor of red tart pitted cherries, mechanized bulk handling sends damage-free cans to process at rate that

Lifts roadblock seasonal

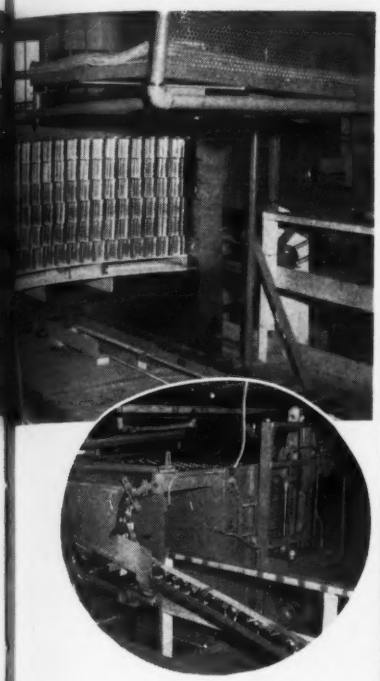
Problem: High-speed production is more essential in the cherry business than in other types of canning due to the very short season.

Fruit Growers Cooperative,



At Canco's Milwaukee plant, cans are automatically palletized, then hand-wrapped

De-palletizer operator "brushes" off entire layer of No. 2 cans into dual runways (one shown, inset) that take them to fillers



to efficient production

for example, handles some 20 million lb of the fruit during the usual 5-week period of operations.

During peak season, the company's Sturgeon Bay, Wis., plant and a second plant at nearby Sister Bay employ about 250 people and pack as many as 30 million lb of cherries. The five processing lines have a capacity of 685 cans per min.

To solve dilemma of supply of cans keeping up with production, members of the Co-operative decided on mechanization.

Solution: For most recent cherry pack, FGC installed three Canco de-palletizing units (the first in Wisconsin), an exterior elevator and a new labeling and casing line. All of these are geared to keep pace

(*Continued on page 63*)

your product belongs

in glass by Brockway

Is YOUR product in evidence when culinary "experts" don the chef's hat to prepare a feast that is fit for a King? The first requirement is consumer acceptance . . . acceptance of the fine taste and special goodness of your product . . . and acceptance for the container in which it is presented for sale. ● Nothing will make a good product more readily acceptable than a quality glass container by Brockway . . . a container that presents the product with all its appetite appeal . . . a container with unique clarity to provide sales appeal unmatched by any other type of container. ● A product that is worthy of consumer acceptance deserves a quality glass container by Brockway.

BROCKWAY GLASS COMPANY, INC., Brockway, Pennsylvania
Sales Offices in Principal Cities

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GAYLORD DEPENDABILITY
KEEPS YOUR PRODUCTION ROLLING

You get a clear track to corrugated boxes when you signal Gaylord to start the run. In all lines of industry, Gaylord has a well earned reputation for delivering the packaging . . . so you can package and deliver the goods . . . on schedule.

Regular corrugated containers in big volume runs, or engineered packaging, give your G-Man the green light . . . keep production rolling profitably.

GAYLORD
CONTAINER CORPORATION

Gaylord Boxes

HEADQUARTERS, ST. LOUIS
PLANTS COAST TO COAST

DIVISION OF **Crown Zellerbach Corporation**

For more information on product at left, circle 6120 see information request blank opposite last page.

FOR MEN WHO MANAGE FOOD PROCESSING FEBRUARY 1959
VOL. 20 NO. 2

The Challenge of the Profit Squeeze

The profit outlook may not be so squeezed for those who persist in the search for improved techniques of producing and selling

H. J. HEINZ II
President
H. J. Heinz Co.

One hears a great deal about the profit squeeze facing the food industry. This is reflected through rising costs and highly competitive forces which keep prices down.

How can we live dynamically in a profit squeeze era?

H. J. Heinz II, President, H. J. Heinz Co., contributing to the '59 forecast in our associate publication, FOOD BUSINESS, realistically tells food processors where they must act in order to beat the profit squeeze.

His comments on techniques of research and production, in this regard, are especially significant. We are therefore, reprinting them here for our readers.

—The Editors

As the processed food industry enters 1959, it is becoming clearer to me that we in the industry no longer view the situation as we did, say, a year ago — even though the situation is really not much different from what it was then.

A year ago, we were at the start of a recession that had followed on several years of inflation — several years of rising costs and prices, of more and more prosperity and less and less profits.

Today, with the recession lifting, many of us are wondering, somewhat privately, how we can best make money during inflation. We have, in other words, come to recognize that the profit squeeze is still with us, and that it is likely to be with us for a long time.

We are coming to recognize, whether we like it or not, that some minimal degree of inflation seems to be an inherent part of this present phase of our economic system.

This is not so agonizing a reappraisal, nor even so gloomy a one, as it first seems.

Profits have not been cut to zero; rather, events have shown that the profit rates of the Twenties are no longer feasible for the processed food industry in a maturing economy.

When the phenomenon of the profit squeeze first came upon us in the post-war years, we assumed it was temporary. But we took the right steps; we invented new products and new methods of marketing — so as to increase gross sales and keep up the profit total.

Now, I think, we are at a shaking-down stage. "New marketing" alone is not enough; what we need, obviously, is the kind of new marketing that is effective, and effective all along the line from advertising to merchandising.

And "new products," as all of us have learned, are not enough; they have to be flavorful and attractive new products, they have to be researched thoroughly at their conception and in their laboratory development, they have to be scaled-up to factory production, they have to be advertised and promoted and merchandised properly. If at any of these stages a poor job is done, then the new product suddenly becomes an ex-product.

We at Heinz accept the challenge handed us by these new conditions. We are grappling with **all** the problems of producing truly new products, at **all** the stages from research to point-of-sale.

We are aware that it is extremely difficult to grapple successfully with each of the problems all along the line for only one new product. It calls for a coordinating of food technology, marketing technology, and personnel-organization technology.

At Heinz we feel that we have had an exhilarating and rewarding year. As a visible earnest of our resolve to deal with the problem I have just outlined, we completed and formally dedicated the new Heinz Research Center. Here we built what we believe to be the finest in laboratories and testing kitchens.

In the dedication ceremonies — in which we used the medium of closed-circuit television to exhibit the Research Center in Pittsburgh to friends gathered at dinners in 29 major cities — we presented a new image of the House of Heinz.

And we did one more thing of which we are proud and which we believe has a bearing on our future and the future of the industry in the context that I have set forth above. (*Continued on page* 40)

Last month, the views of eight of industry's leading research directors appeared in FOOD PROCESSING, answering the question: "What are the three most pressing technical problems facing your segment of the food industry?" To conclude this round up, here are the views of five more leaders who . . .

FOCUS

ON TECHNICAL PROBLEMS FOR '59

MUST SOLVE DAIRY DISTRIBUTION PROBLEMS

DR. CHARLES W. KAUFMAN
Director, Research and Development Division
National Dairy Products Corporation

There is certainly no dearth of technical problems facing the dairy industry today.

However, we do feel there are two, the immediate solution of which is dictated by present-day economics if we are to keep pace with other segments of the food industry.

The first of these revolves around the economics of present-day delivery systems.

As a result of increasing delivery costs, a great deal of pressure is being brought to bear to find ways and means of processing and storing surplus milk during times of peak production.

Furthermore, ways and means must be found for packaging this surplus milk which would permit it to keep for six months to a year, and delivering it to the consumer in a more economical fashion than is now customary.

This basic problem is of course, being attacked in a variety of ways, including:

Research efforts to produce dried whole milk powders which will reconstitute in such a way as to be indistinguishable from fresh milk.

Research directed to concentrated milks which can be stored, packaged and delivered either as sterile products handled through normal channels of distribution, or as frozen products handled through frozen food distribution.

This research is being carried on by all types of agen-

(*Continued on page* 37)

APPLYING CONTINUOUS PROCESSING CHALLENGES ENTIRE INDUSTRY

N. L. SCHLEIFER
Technical Director
Falstaff Brewing Corporation

America's brewing industry may achieve a new era of even greater quality and uniformity control, peak efficiency and growing productivity as its scientists work to meet these current challenges:

1. Further increase beer's shelf life or stability.
2. Eliminate the batch cycle in favor of a more efficient continuous brewing.
3. Tighten processing requirements through modern engineering and quality controls.

Increased colloidal stability of beer would aid in equalizing production schedules. Inventories could then be developed in advance of peak sales periods.

Continuous processing, although far from perfection in the brewing industry, has been successful to a degree in related fermentation industries.

A continuous flow process would provide more uniform and stable conditions than the commonly employed batch program.

Continuous processing is not exclusively a problem of the brewing industry. Other food processors share our mutual interest in its further development.

Tightened processing requirements, aided by advanced controls on product uniformity and quality, would reflect a directly proportionate increase in productivity.

Some may call these problems. Our brewing industry scientists look on them as challenges.

FREEZE HASTENS PROGRESS ON CITRUS CONCENTRATE PROBLEMS

DR. WALLACE R. ROY
Vice President
Technical Services Division
Minute Maid Corporation

The old adage, "it's an ill wind turns none to good", was particularly applicable to the big freeze which occurred in Florida during the winter of 1957-58.

While a great many growers and processors were hurt economically from loss of fruit, and even groves, the frozen orange concentrate industry profited from the experience in technical knowledge.

The fruit which survived the cold was damaged in such a way that its juice became inherently less stable physically. For example, concentrate prepared from such juice would have a tendency to "gel" or "separate".

Accordingly, a considerable amount of investigational work was conducted, resulting in development of better methods of extraction and finishing which were immediately put into effect.

In spite of the inherent instability of the juice, application of these improved methods resulted in a 1957-58 pack of frozen concentrated orange juice of superior physical stability, and a flavor at the retail level at least as good as it had been in previous seasons.

The foregoing points up one of the most pressing technical problems that has plagued the citrus concentrate industry.

If the experience gained during the critical freeze year is applied conscientiously during what is hoped will be normal years, physical instability will no longer be the major problem that it has been in the past. That is, of course, providing the conditions under which the product is handled after leaving the plants do not deteriorate further.

In addition to problems relating to physical stability, several problems exist with respect to flavor of citrus concentrates. These are:

(a) prevention of "off-flavors" which may occur in storage as a result of processing techniques or from raw materials;
(b) lack of full intense fruit flavors;
(c) and tendency of the typical fruit juice flavor to fade or diminish with extended frozen storage.

Progress is being made in overcoming (b) and (c) by new techniques that appear quite promising. During the next two years, more and more citrus concentrate will appear on the market manufactured by new and refined processes.

Research during the past three or four years, devoted to studies of off flavors and their causes, has opened up promising leads.

Practical application of these findings should go a long way toward eliminating these defects.

EXTEND SHELF LIFE AND LOWER PRODUCTION COSTS

JUSTIN J. ALIKONIS
Director of Research
Paul F. Beich Company

Flavor and texture control, with improved shelf life and lower production costs for old and new products are the most pressing problems facing the confectionery and chocolate industry today.

Years ago, confections and chocolate catered only to the sweet tooth.

Now, however, these items must have flavor control, maximum shelf life, be attractively packaged and appeal to the changing habits of the consumer.

Our industry is also faced with the problem of getting management, as a whole, to provide incentive for food technologists to do a great deal of imaginative and progressive thinking, and to help apply new ideas to a segment of the food industry that has

(*Continued on page* 37)

BETTER POST-PLANT HANDLING OF FROZEN FOODS NEEDED

DR. ROBERT M. SCHAFFNER
Vice President and
Director of Research
Libby, McNeill & Libby

Of the myriad of technical problems being tackled by research personnel throughout the canning and freezing industry today, the three most pressing, in my opinion, are:

1. Providing fresher flavor and appearance.
2. Eliminating post-plant frozen food abuse.
3. Developing effective non-toxic pesticides.

It is, naturally, the prime objective in the canning and freezing industry to provide consumers with foods having even more "natural-fresh" flavor and appearance.

Much research work has been done, and is still being done to accomplish this. Lower time and temperature for canned foods and faster freezing for frozen foods are under constant study.

(*Continued on page* 37)

Latest Findings on Radiation Preservation of Foods lead radiation expert to pose a challenge and an opportunity to the US food processing industry to

capitalize on grain surplus

NORMAN W. DESROSIER
Professor of Food Technology
Purdue University
Lafayette, Indiana

Chicken happens to be the most successful radiation treated food, currently. Radiation sterilized chicken has been stored successfully for more than a year at room temperature.

After this period of storage, when prepared for the table, consumers find the chicken as acceptable as its freshly procured counterpart, and are usually unable to tell which item in the meal was treated.

People the world over like chicken; in some countries, prefer it to beef.

Now, Dr. Desrosier, recent head of the Quartermaster's Radiation Preservation of Foods program, proposes that the mountain of surplus grain be converted to protein by feeding to chickens (experimentally approaching a pound of broiler per pound of feed), then exporting radiation-preserved chicken meat.

The industrial food organizations of the USA are the most integrated that have yet been devised and operated successfully by a large society of men. Our food distribution organizations already exist and are most organized in bringing food from the field to the tables of consumers.

A great opportunity faces our food industry in exploiting the peaceful uses of atomic energy in extending these services to the world. There are benefits to be harvested for the taxpayer of the USA and benefits outside our borders.

There is ample food on earth, but food production is uneven, and the mountains of food in one area have been unable to be distributed economically. The cost to redistribute food is too great to be borne by a society. To store, then ship and distribute food one must be able to deter natural destructive forces which operate on this food supply.

Too, the food which is distributed must be an expensive food rather than one of great bulk. No practical means has yet been available.

Practical requirements

What is required is a method of preserving food which permits the economical distribution of animal flesh, for example, and deters its decay.

Packaging requirements must be within the reach of the economics of the situation — must be inexpensive.

The food need not be preserved forever, but for sufficient time to have it distributed and consumed, with a margin of safety added. There should be relatively little change in the food, and the natural condition should be maintained, permitting a greater degree of freedom in food preparation and cookery, to overcome monotony and receive large demand.

What appears on the surface to be a great waste could be turned into a great advantage. This is the challenge.

Radiation has these potential beneficial characteristics, but it is something like having gold in the seas. Its exploitation seemed beyond us.

Our society has available and could apply radiation to improve the economics of food distribution. We have mountains of surplus grains, and we have figuratively mountains of wasted radiation source.

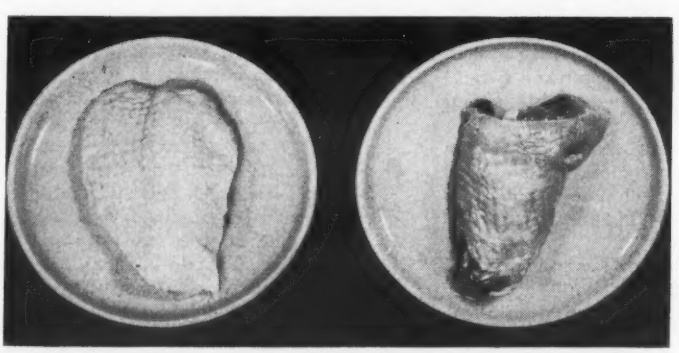
To permit the orderly decay of grains, and to permit the decay of radioisotopes without use of the radiation is a fantastic financial burden on our people.

Major achievements

Under guidance of the US Congress, the agencies of our government have undertaken the most elaborate research project ever conducted on the foods of man, in the applications of atomic energy in food stabilization. More than 300 scientists working in more than 100 laboratories throughout the country were mobilized for a concerted drive to a successful solution to this application.

Millions of dollars have been spent on this project. There are conflicting reports of the entire program, and conflicting

(*Continued on page* 106)



After two weeks at cool refrigerated temp, radiation pasteurized (approx. 1 million rad) chicken thigh, left, has normal appearance and texture, while untreated thigh at right shows pronounced deterioration

William K. Coors, right, and Jack Porterfield, chief engineer on the aluminum can project, examine brewery's supply of 50-lb aluminum ingots, purchased from prime aluminum suppliers. End product of the now perfected automatic can-making process is this four-color, lithoed, lacquered, seven-oz aluminum beer can (shown 3/5 actual size)

Coors Scores Aluminum Can First

WILLIAM K. COORS, President

Adolph Coors Company
Golden, Colorado

- **First US brewery to achieve automatic, economic manufacture of aluminum cans**
- **First brewery anywhere to successfully package draught beer in any kind of can**

On January 15, Adolph Coors Company introduced seven-oz, returnable aluminum cans — developed by the brewery after four years of intensive research.

Introduction has been on a pilot scale in a Denver area test market, but already has attracted worldwide inquiry from other breweries and industrial users.

The cans are as strong as conventional tinplate cans of comparable size, but weigh only 40 per cent as much.

Production is completely automatic — from the 99.5 per cent pure aluminum ingot at one end to the finished, lithographed cans turned out at the other.

Four-year program

Coors has carried on a research and development program to solve the problem of manufacturing seamless aluminum cans since the organization in 1954 of Aluminum International, Inc.

The corporation was formed by Beatrice Foods Company and Adolph Coors Company for the purpose of developing an economic process for manufacture of aluminum cans for food and other industries.

(Coors plans to offer its findings to industry; already is shipping aluminum impact extrusion slugs to established industrial users and can companies in US and abroad.)

Both companies had been considering the possibilities of an aluminum beer can — Coors for its own brewing operation in Golden, and Beatrice for its brewing operation (Hawaii Brewing Corp.) in Honolulu, where conventional beer cans were not available.

The companies decided to join forces and Aluminum International, Inc., was formed, with Adolph Coors Company as the research and development arm of the project.

Coors built a special plant in Golden and began to design and develop machinery to put the program into effect.

Based on our experience to date, we feel that the aluminum can, in its present stage of development, can be reasonably competitive with the tinplate can only if a food or beverage processor is willing to make his own cans.

Why aluminum cans?

When we first got into the aluminum can field in 1954, we had already given very serious consideration to setting up our own tinplate can line.

Even today, there is no question in our minds that a captive operation for manufacturing tinplate cans would be far more desirable than the same for an aluminum can.

However, because of the considerable investment required with a tinplate can line, we decided to look into the aluminum can first.

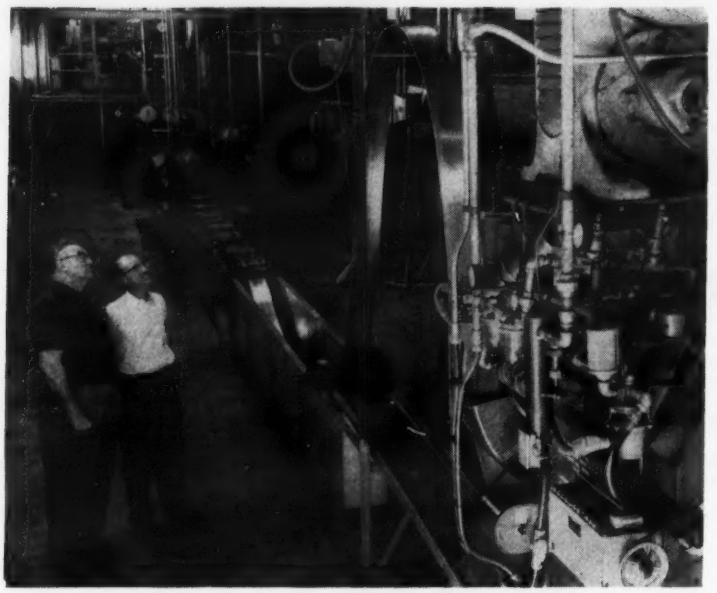
Now, four years and 4000 research headaches later, we've perfected a low cost method of converting aluminum ingot into impact extrusion slugs — by continuous strip casting, rolling and blanking out — that is the essential key to economic manufacture of aluminum cans.

As to cost of our cans, our preliminary estimates indicate that we can make them for ourselves at about the same price which we have been quoted by the can companies for the similar can out of tin plate.

The can itself has certain

(*Continued on next page*)

1. Pig aluminum is melted in electric furnace at about 1300°F. Also, all scrap from slug-blanking press is returned to the melting furnace (note arrow), completely eliminating waste



2. Over-all view of completely automatic aluminum can line which converts aluminum ingot into impact extrusion slugs by continuous strip casting, rolling and blanking out. Blanking press in foreground stamps out 1/8"-thick by 2 3/32"-diam aluminum slugs at rate of 3000 lb per hr. Slugs are fed automatically into annealing furnace, emerging "dead soft" after 1½-hr — then are washed, deburred and lubricated

Aluminum Can First –

(continued from previous page)

points in its favor. Our investigations showed that aluminum retained beer flavor very well over a long storage period, although we did find it necessary to line the cans with vinyl.

Actually, aluminum with vinyl has proved somewhat better than the conventional can for preservation of beer quality.

There are other, fairly obvious, advantages. The cans combine light weight with strength, present a very attractive appearance, are relatively easy to open.

Lack of side seam and bottom seam eliminates most of the "leaker" problem found with conventional cans. The new cans are, of course, completely rustproof.

A less obvious but very big reason for our going into aluminum cans was our desire to do something about the disposal problem of the beer can.

Literally thousands of these cans are dumped on American highways, park systems, etc., every day. We ourselves use over 100 tons of tinplate cans daily. Since the aluminum cans are returnable at one cent apiece, much of this litter may be eliminated.

Major Steps in Coors' Automatic Can-making, Asep

We have spent considerable time and effort in working out techniques for recovering the aluminum in the used can. At present, we can get from 95 to 96 per cent recovery of aluminum of sufficient quality to put right back into our process.

One of our problems in this respect has been the design of the can lid. Because of our impact extrusion process, we are limted to use of 99.5 per cent pure aluminum on the can body.

It would, of course, be desirable to use a high-strength aluminum alloy lid. However, having the can body and the lid of different alloy composition would make it impossible for us to reclaim the scrapped cans ourselves.

By having lid and body of the same composition, we are in a position to give full price for the scrap return, whereas, if the used cans were to get themselves into established scrap channels, they would bring not more than one third of full aluminum price, if that.

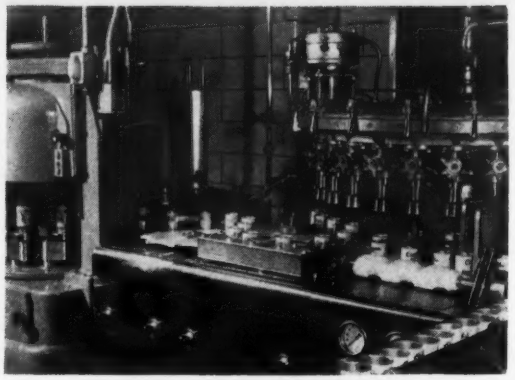
As to drawbacks, the one major objection is the extreme difficulty in handling them. They are light, bouncy, delicate and obstinate, and, as such, cannot be handled in conventional equipment.

All of our filling equipment, closing machines, conveying equipment, elevators, etc., have been extensively modified here with generous use of Teflon to prevent sticking and jamming, to enable us to get any semblance of operation at all.

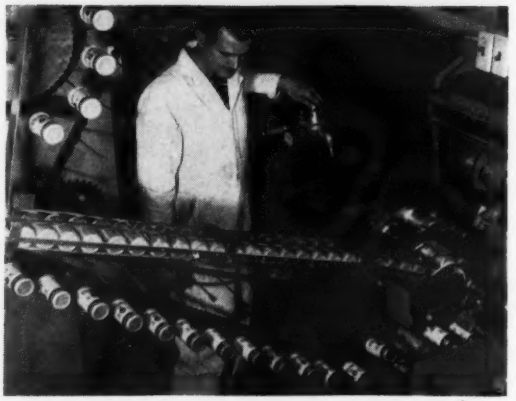
This is a major problem, and should not be overlooked by anybody getting into the aluminum can field.

Why draught beer?

In introducing draught beer in cans, we are fulfilling two of four dreams: 1) aseptic filling, and 2) a refrigerated

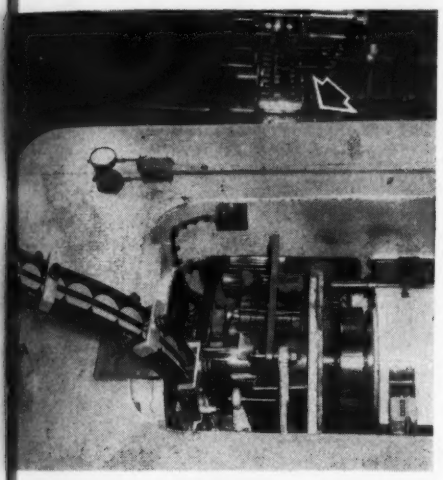


5. In this hermetically sealed room, the aluminum cans are filled automatically in atmosphere of completely sterile, electrostatically filtered air. (Ultra-violet rays are used as an additional sterile control.) These precautions, plus fact that the beer is subjected to ultra-filtration (using asbestos filter media) eliminates need for pasteurization and allows canning of true draught beer. Pre-sterilized convex aluminum lids (also manufactured by Coors) are crimped on, cans are externally washed, fed through X-ray device which checks fill and are automatically cartoned in eight-packs



4. After cans are trimmed to length, flanged, degreased, mildly etched and rinsed, they are decorated in four colors with Coors' buff, gold, red and black, and receive overcoat of varnish. Coors is believed first to do entire can decorating job in one pass through a rotary lithography press. After exterior coating is oven-dried, protective internal coating (beer vinyl) is automatically applied and oven-dried

3. Hot slugs at left enter German-made, Coors-modified impact extrusion press, are hit in a die with a hardened steel punch powered by 400 tons of pressure, leave as rough aluminum cans (arrow)



Aseptic-Filling Process

product from brewery to consumer.

We have long been interested in aseptic packaging of beer to eliminate the pasteurization step, which is an expensive one, and which we feel is somewhat damaging to the quality of the beer, although this is controversial in the industry.

(Other articles on aseptic filling on pp. 35 and 39.)

The true enemy of so-called "brewery fresh" or "draught beer flavor" is not necessarily pasteurization, but any prolonged warm temperature, such as a can or bottle is subject to as it sits on the distributor's, dealer's or customer's shelf prior to consumption.

If beer can be kept cold from the time it leaves the brewery until it reaches the ultimate consumer, it will retain the so-called "draught beer" flavor.

A beer can must be designed to withstand 100 psi internal pressure if it is to undergo pasteurization. If the pasteurization process is eliminated, it can be designed for only 50 psi internal pressure.

The consequent saving in amount of metal required in the aluminum can amounts to approximately four dollars per thousand, which is quite an important factor.

Why 'pony' size?

We chose the seven-oz size rather than the conventional 12-oz size for several reasons. First, the economics of our process favor a smaller can.

Secondly, we do not have a seven-oz package on the market as do the large majority of brewers who are directly competing with us, and our distributors have long been hounding us for same.

It occurred to us that this was an excellent opportunity to provide them with a seven-oz can.

If we chose a 12-oz can, it would simply be a small addition to our regular 12-oz overall volume.

Our 12-oz tinplate can lines operate at 1200 to 1600 cans per min. Maximum speed of our present aluminum can line is 100 per min. It is distinctly a pilot-plant operation.

The problem of how to market a small percentage of total volume in aluminum cans is greatly simplified, in that this is a new and novel package.

Minimum retail price on the eight-pack package of draught beer in seven-oz aluminum cans will be 95 cents. Net price to the consumer, based on the fact that each can is returnable for one cent apiece, will be 87 cents. Thus, cost per oz of beer figures out to .0155.

This is an almost exact equivalent to the .0150 per oz cost of Coors Banquet beer in 12-oz tinplate cans in six-packs. Coors' minimum retail price on this package is $1.08.

As to the future of the aluminum can development, we feel that if we have come up with something really good our customers will be quick to tell us so. Their response to this initial effort determines the future.

Complete dispersion of shortening into prepared mixes

is final step in processing for uniformity of DCA Food Industries' line of products

J. TRAVIS, Manufacturing Engineer
DCA Food Industries
H. P. MILLEVILLE, Editor of FOOD PROCESSING

DCA Food Industries' plant in Hillsdale, Michigan (formerly F. W. Stock & Sons) has modernized the operation required to obtain a completely homogeneous mixture of shortening in its line of prepared mixes.

First the mix passes through three ribbon blenders in a semi-continuous operation. That is, the ingredients are vigorously mixed for a period of time in the first ribbon blender then discharged into the second, etc.

Note that the discharging operation — the complete emptying of a blender into another — is an effective part of the overall mixing operation.

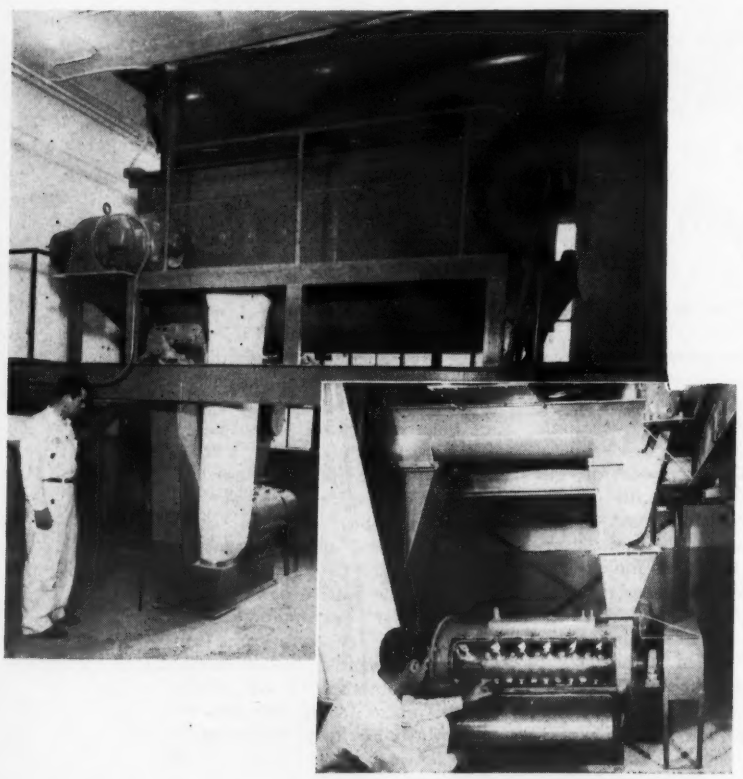
Even though subject to vigorous action in the ribbon blenders, some shortening in the mix always remains as balls or "pills."

Formerly, these balls of shortening were eliminated by brushing the mix through sieves. In this way the balls of shortening were rubbed into the other dry ingredients.

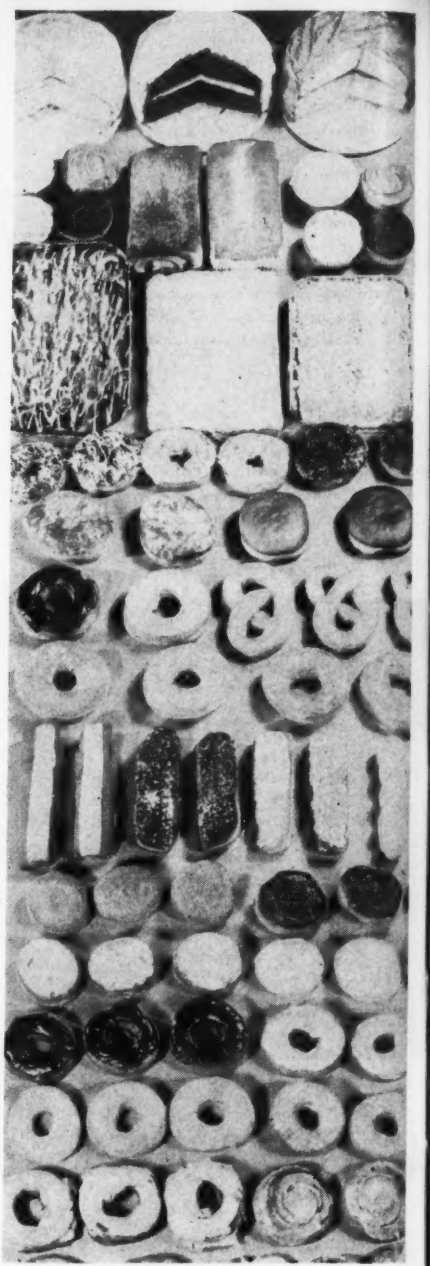
Now the balls of shortening are disintegrated into the other dry ingredients by the powerful impact action of a Turbulizer. Interior of the Turbulizer is shown in the photo below.

Rigid (adjustable) paddles on a horizontal shaft hit particles of the mix at 150 ft per sec with a 1/16 inch clearance from the cylindrical walls. They create a highly turbulent flow of mix and air through the unit.

(*Continued on page* 50)



After passing successively through three ribbon blenders, the mixes are "homogenized" in a Turbulizer, that is, any tiny balls of shortening still remaining are disintegrated by powerful impact action. Top view shows the third ribbon blender which discharges into the Turbulizer. Inset is a close-up of the Turbulizer with the removable panel open for inspection. Note the paddles mounted on the horizontal shaft which revolves at 1800 rpm. The mix enters the Turbulizer at the right and is discharged at the left into a bin ahead of a bagging machine on the floor below. Excess air from the Turbulizer action is discharged through the cloth filter bag visible in both photos



Bakers and other food processors are finding it advantageous to use prepared mixes for sweet dough bases as well as cake and yeast-raised donuts such as are shown in the photo. Mixes are formulated to individual requirements of each user and include those for such recently developed products as frozen waffles and frozen pancakes. (For more information concerning this service write to DCA Food Industries, 45 West 36th St., New York 18, N. Y. or circle 6121)

UPHEAVAL

IN BEVERAGE PROCESSING?

Conventional methods of pasteurizing and sterilizing are being replaced by new techniques which offer products with improved flavor

KARL ROBE, Associate Editor

"Old time tap flavor" in canned or bottled beer? Wines whose delicate aromas have not been damaged by heat treatment?

Fruit drinks with an unpasteurized "fresh fruit" flavor? Elimination of conventional pasteurizers in packaging of beverages? Certainly, these are advantages worthy of investigation by processors.

Several US processors have been using or testing one or the other of these two methods extensively for the past several years. One US brewer has just announced availability of draught beer in cans (see page 31).

Although either of two processing techniques may be used, the key to each is aseptic packaging.

In both cases, conventional pasteurization after canning or bottling is eliminated. Beverages are filled and closed "cold" under aseptic conditions, thus eliminating or minimizing flavor changes due to heating.

Both sterile filtration and HTST or bulk pasteurization (brewers shorten the term to "bulk pasteurizing") are already being used successfully for some fine wines. Their use in wineries is growing.

Some of the large California wineries are running tests on one or both methods. Bulk pasteurizing for beer is a controversial issue at present among brewers.

Two big advantages make these processes attractive speculations: possibility of increasing product quality, and in the case of bulk pasteurizing, lowering production costs.

I. Sterile filtration processing

Basically the sterile filtration technique is simple: a tight filtration to remove all particles in the bacterial-size range, followed by sterile filling. Practical considerations have made its application much more complex, however.

Wine: Commercially, a number of California processors of fine table wines are using sterile filtration followed by immediate filling under sanitary conditions. No heat pasteurization is used.

Most of the larger California wineries are employing some aspects of sterile filtration techniques, and are actively investigating programs for adopting the sterile filtration/aseptic bottling method to their high speed packaging requirements.

Because of the built-in immunity of wines to spoilage organisms (due in part to alcohol content), a one-hundred per cent sterilization (in the bacteriological sense) is not necessary to prevent wine spoilage.

Aseptic techniques are more difficult to apply to other beverages, because of their differing tolerance to spoilage organisms. Beer, for instance, has higher fermentable solids, lower alcoholic content, and higher pH than wine.

Fruit juices: Experiments with sterile filtration of fruit juices several years ago in England were not impressive. However, since that time new techniques have been developed which may revive further interest in this area for certain juices and pulp-free extracts. German grape juice and wine processors have been using sterile filtration combined with sulfur dioxide treatment of equipment and containers for many years.

Carbonated beverages: Partial steps toward use of sterile filtration have been taken by producers of carbonated beverages, at least one of whom use a sterile filtration in treatment of process water.

Beer: Brewers, too, have been swinging in the direction of more highly refined filtration technique in the past few years.

Most brewers have changed to a diatomaceous earth filter for their final polish filtration, replacing old pulp filters.

This change-over to a more refined filtration has resulted in a practically sterile product which has an extended storage life, even without the employment of sterile processing techniques.

The idea of removal of microorganisms by filtration is not new. As far back as 25 years ago, one chemical engineer reports he observed sterile filtration processing under trial by a Chicago brewer.

II. Continuous pasteurizing-cooling

Bulk pasteurization has been used for several years by Scandinavian brewing companies.

Within the past two years, at least two US breweries have reportedly used the bulk pasteurizing/aseptic bottling method on a commercial or semi-commercial scale. Secrecy about these activities is still being maintained, however.

Some US wineries are using bulk pasteurizing on their high volume wines. The dairy industry has converted almost 100% to continuous bulk (i.e., HTST) pasteurizing from the batch pasteurizing, which was used prior to World War II.

For an up-to-date report on the present status of process — HTST sterilizing, cooling, aseptic filling into sterile cans — for canned foods, see page 39.

III. Aseptic packaging

Whether bulk pasteurizing or sterile filtration is used, either method is dependent on

(*Continued on next page*)

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Upheaval

(*Continued from preceding page*)

some form of aseptic filling and closing to prevent post-contamination (unless refrigerated distribution is used).

In the canning industry, aseptic packaging is accomplished by sterilizing the filling and closing equipment and the containers with high temperature steam. In the beverage industry, the sterility of equipment is maintained by chemical treatment. Containers are sanitized in conventional washers.

A Norwegian brewery which has used aseptic bottling (followed by bulk pasteurization) for several years reports that little change in equipment was necessary to adapt their bottle shop to aseptic filling. Biggest change was elimination of the bottle pasteurizer.

They use their regular bottle washer to sterilize the bottles. Caustic in soakers is maintained at 2½ per cent and temperatures in washers was increased to 167°F.

A perforated pipe was installed over the filler and entire filler is sprayed with quaternary ammonium solution. Water at 194°F is run through fillers for 20 minutes after production has ceased, followed by quaternary ammonia solution.

Same solution is used to wash conveyors which carry bottles to filling machine.

Several US wineries have used chemical sterilizing techniques for over eight years. Their techniques will be described step-by-step in a later issue.

Flavor: Sterile filtration definitely improves the flavor of wines by eliminating all heat damage. Whether it would improve the flavor of beer, or would remove too much of the desirable flavor components, is still being debated.

Bulk pasteurization of beer appears to offer lower production costs and the possibility of flavor improvement — though some brewers doubt this latter point.

The skeptical brewers contend that flavor advantage is bound to be slight in view of the close temperature control (which results in little appre-

(*Continued on page 38*)

FOCUS
on technical problems for '59

Dairy distribution

(*Continued from page 28*)

cies — industry, government and academic. It must, and will lead to a successful solution of the distribution problem in the next few years.

The second major problem has to do with by-products within the industry.

In the cheese industry, 100 pounds of milk produces ten pounds of cheese and 90 pounds of by-product.

Obviously, in these areas of increasing economic pressure, such relationship is unsound. Therefore, ways and means must be found for utilizing, in other ways than distress channels, the fine, high-quality proteins, minerals and vitamins which remain in the by-product material.

Another phase of this same problem has to do with returned goods. Because of the perishable nature of many of these dairy products, they are placed in the market to be sold within a definite time limit.

If they are not, they are returned. The industry is faced with either an out-of-stock condition in the stores or with overstocking and consequent returns.

The problem of what to do with this essentially wholesome returned merchandise is receiving and will continue to receive a great deal of attention within the industry.

Extend shelf life

(*Continued from page 29*)

long been hidebound by traditions and custom.

There isn't a single process or food product upon which improvements cannot be made.

The first step is to sell management on buying and installing the necessary equipment to bring down rising costs in food items.

Advancements in instrumentation and in automatic and continuous food processing equipment that are available today would make most of the confectionery and chocolate plants obsolete.

Material handling must be geared to the individual plant.

It was once thought that bulk handling was only for large concerns. Today, however, even the small manufacturer can take advantage of bulk handling equipment which can be geared to his production.

The costs of handling materials has risen and continues to rise to the point where it must be done mechanically, continuously and efficiently.

Wherever possible, processing should be placed on "on-stream" production as is so common in the chemical industry.

Continuous methods can be adapted to any food product. The question today is whether modernization can be done completely or gradually.

The solution of these problems can be accomplished by applying the new technical and scientific data available today to the food processing industry.

Frozen food problems

(*Continued from page 29*)

Foods that offer maximum organoleptic appeal and still provide good nutrition is the goal.

Recent industry studies of the abuse of frozen foods, from food plant to consumer, clearly points out that this is the number one problem of the frozen food industry.

It is a "must" that ways and means be devised by researchers to stop this abuse and bring to the consumers the same fine "built-in" taste and appearance the foods have when they leave the plant.

Because all processors are continually battling pests — insects, worms, weeds, plant diseases — a great variety of pesticides are used for control.

Some are old standbys, others are new. Considerable research will have to be carried out to develop insecticides and methods that will be more effective in destroying these pests and still not leave residues that are toxic to man.

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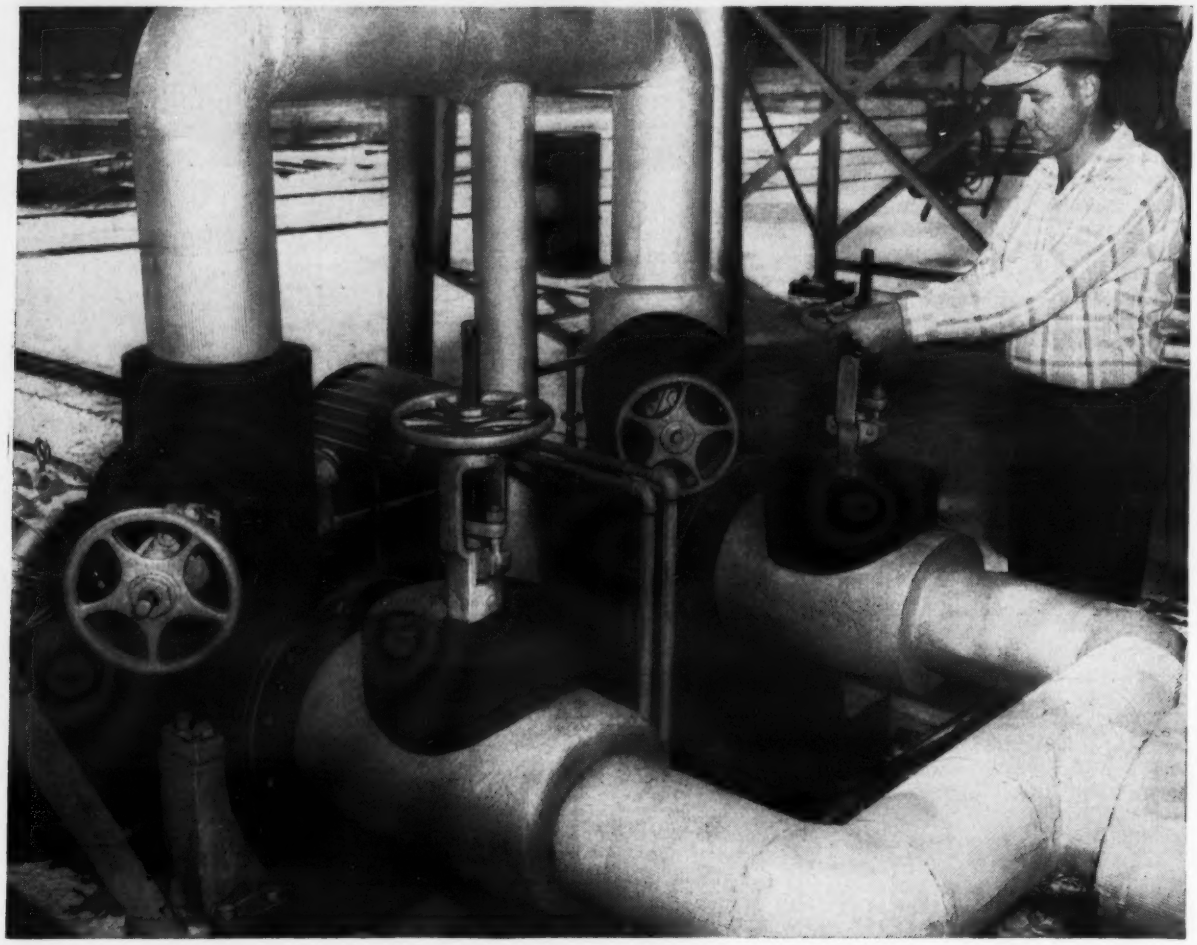

Uses CRANE valves on Dowtherm
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Upheaval

(*Continued from page* 36)

ciable flavor change) that exists in modern bottle and can pasteurizers.

Also, the mass taste may now be conditioned to prefer the present pasteurized product over the unpasteurized draft flavors. Only extensive market tests will prove or disprove this point.

The possibility of lowering production costs seems to be the more immediate goal of some breweries who are interested in bulk pasteurizing followed by aseptic canning. On the other hand, sterile filtration actually costs more than conventional processing.

Limitations: Higher production rates will have to be achieved before either sterile filtration or bulk pasteurizing receives widespread adoption. Personnel must be trained to think and act dependably as applied bacteriologists.

Considerable research and testing capital will have to be expended before any form of aseptic beverage filling techniques are applied to beer, fruit juices or other beverages.

Many existing processing and packaging rooms would need revising before aseptic filling and closing is achieved on a mass-production basis. For instance, all-tile interiors and air conditioning might be required.

Higher sanitation standards will have to be maintained. Personnel must keep an awareness of the importance of sanitary practices.

So far, you can't go out and buy equipment to install a finished aseptic beverage production line, per se. Instead, existing equipment is being modified as needed.

Thus, the key to success for any method of eliminating in-bottle or in-can pasteurizing lies in **proper selection of personnel**—persons who will approach these techniques as "applied bacteriologists". This is the one universal comment of those who have been working in the field.

Future: Commenting on the beer produced by continuous pasteurization and aseptic filling, the Brewmaster of the Norwegian brewery reported

(*Continued on page* 108)

The Dole aseptic canning system, invented by Dr. William McKinley Martin, rapidly sterilizes food products and rapidly cools them in efficient, continuous heat exchangers before filling into sterile containers. Advantages: less heat effect on flavor; hence fresher taste.

ASEPTIC SYSTEM is 'catching on'

44 Dole canning units in field vs 19 five years ago

There are now 44 Dole aseptic canning units in operation, Harry Goff, president of James Dole Engineering Co. reports to FOOD PROCESSING. Over 200 million cans have been packed on these units.

This contrasts with 19 units in the field in 1953, and the one prototype in operation in 1950 at Andersen's Foods in Santa Barbara, Calif.

One of the principal applications of the aseptic system has been with evaporated milk, which has been produced for the California market for several years. The aseptically canned evaporated milk is packed in regular sanitary-type, double-seamed cans, in contrast to the soldered cap conventionally used.

Other aseptic units are being used for baby food formula, soups, cream, banana puree, other fruit purees and concentrates, ice cream mixes, and whole milk.

Units are operating in Switzerland, Germany, and England.

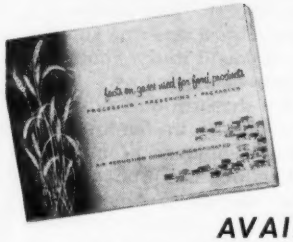
Can sizes being packed range from gallons down to a 4½-oz baby food size, at speeds up to 250 cpm. An experimental model at the University of California has been used successfully on a variety of products in glass.

Rentals (on gallon basis) range from $2600 on smaller units to $4750-$5400 annually on high capacity machines.

(Dole aseptic canning system is development of the James Dole Engineering Co., Industrial Way & Whipple Ave., Redwood City, Calif.)

For more information circle 6125 on Reader Service Slip.

valuable information for profit-minded packagers



ALSO AVAILABLE . . .

"FACTS ON GASES USED FOR FOOD PRODUCTS" covers in detail the aspects of processing, preserving and packaging food products and how the use of the proper compressed gas improves product appearance and shelf life.

Just out — Air Reduction's helpful new brochure, "NEW OPPORTUNITIES FOR MORE PROFITABLE PACKAGING," explains how AIR REDUCTION representatives — both in the field and in the laboratory — work to solve packaging and processing problems involving the use of compressed gases. It shows how both present and prospective users of "push-button" containers will benefit from Air Reduction's extensive experience in this exciting field. The brochure also covers other applications for compressed gases such as blanketing, purging, quick freezing, chilling, hydrogenation and carbonation.

If you package or process a product — send today for your free copy!

AIRCO

AIR REDUCTION COMPANY, INC.

Customer Service Packaging Laboratory

1400 East Washington Avenue
Madison 10, Wisconsin

AIR REDUCTION COMPANY, INCORPORATED
CUSTOMER SERVICE PACKAGING LABORATORY
1400 East Washington Avenue, Madison 10, Wisconsin

Please send, without obligation, the material requested below:

☐ "NEW OPPORTUNITIES FOR MORE PROFITABLE PACKAGING"
☐ "FACTS ON GASES USED FOR FOOD PRODUCTS"

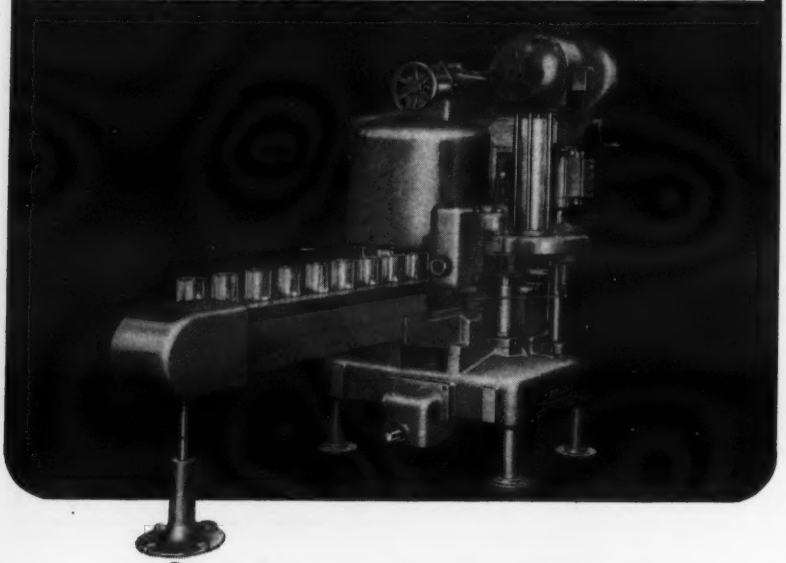
(Please print or type)

Name.....
Title.....
Company.....
Address.....
City.....Zone.....State.....

6126 on Reader Service Slip

Swing To...

ANGELUS
CAN CLOSING MACHINES



Welcome to Angelus Booth #5

Annual Canning Machinery and Suppliers Association Convention, Conrad Hilton Hotel, Chicago, Feb. 20-23, 1959.

The Angelus exhibit this year, as in the past, will provide helpful and constructive consulting assistance for general as well as specific canning line operations. Staff members from our engineering, development and servicing divisions will be in full time attendance to serve you. We cordially invite you to Angelus Booth #5.

Angelus machines will be demonstrated and our technical staff will be pleased to show you how Angelus can make your canning lines more profit with low investment in equipment.

Angelus has over 45 years of experience and is the nation's only manufacturer exclusively producing automatic round can closing machines.

ANGELUS
Sanitary Can Machine Company

6127 on Reader Service Slip

Profit squeeze

(*Continued from page* 27)

Using the pilot shop of our Research Center during a few weeks in the summer, just before the height of the tomato season in California, we were able to scale-up the production process for our new concentrated tomato juice. The pilot shop enabled us in a matter of days to eliminate several alternative processes and to settle on one, a procedure that otherwise would have required weeks of fiddling with full-scale factory operations.

We were thus able to put the tomato juice into production at Tracy, Calif., at the peak of the season, and so the pilot shop saved us a full year in getting a new product on the market.

If I seem to overemphasize one link in the chain of getting a new product on the market successfully, it is only because this one link embodies my confidence in the future of the processed food industry.

There are techniques of research and production comparable to those performed in our pilot shop that are waiting for some one to devise and develop. There are comparable techniques awaiting similar development in the youthful science of marketing.

And for those in our industry who persist in the quest for these techniques of making and selling, the profit outlook may **not** be so squeezed.

"He wants to know do we furvelate our thawklees before we schnorflerize them."

New Low Cost Chlorinated Water Supply FOR FOOD PROCESSING PLANTS

KLENZADE

KLENZADE
IN-PLANT WATER
Chlorination

★ SIMPLE EQUIPMENT
★ LOW COST CHLORINE
★ "SPOT" LOCATION

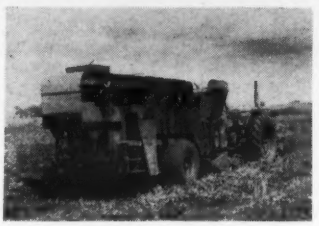
Completely automatic feeding of Klenzade XY-12 Liquid Sodium Hypochlorite into your water line with a %Proportioneers% Heavy Duty Midget Chlor-O-Feeder. Low initial equipment costs, simple installation for any section or entire plant system. No skilled operator needed, no gas risks, no maintenance of elaborate equipment. Solution strength easily adjusted for clean-up time. Get the facts on this popular Klenzade "Package" and why it is ideally suited for your food processing operations.

COMPLETE
Sanitation Programs

Branch Offices in Principal Cities
KLENZADE PRODUCTS, INC.
BELOIT, WISCONSIN

6128 on Reader Service Slip

In field trials at Green Giant — LeSueur, Minn., the mobile harvester averaged a yield of 25-2900 pounds per acre at a speed of 0.62 acres per hour on Alaska and sweet varieties. Harvest totaled 163 acres in 395 gross operating hours



Mobile pea harvester

Eliminates Pea Viner Stations

- **Cuts viner labor 50%**
- **Eliminates truck fleet to haul vines**
- **Provides all-weather operation**

R. D. McCORMICK, Managing Editor

It has been the practice to harvest peas by hauling cut vines to stationary viners. Average stations will have 4 viners.

Peas in a 25 mile radius are cut, windrowed and loaded on trucks or wagons for transport to a viner station for thrashing. A four-viner station requires a minimum of 13 people to cut, load, haul and thrash pea vines at viner stations.

Recent development of the mobile pea harvester permits a crew of six with two harvesters to equal the work accomplished by the four-viner station.

Based on results from a few units in use during 1957 and 1958, the following can be expected:

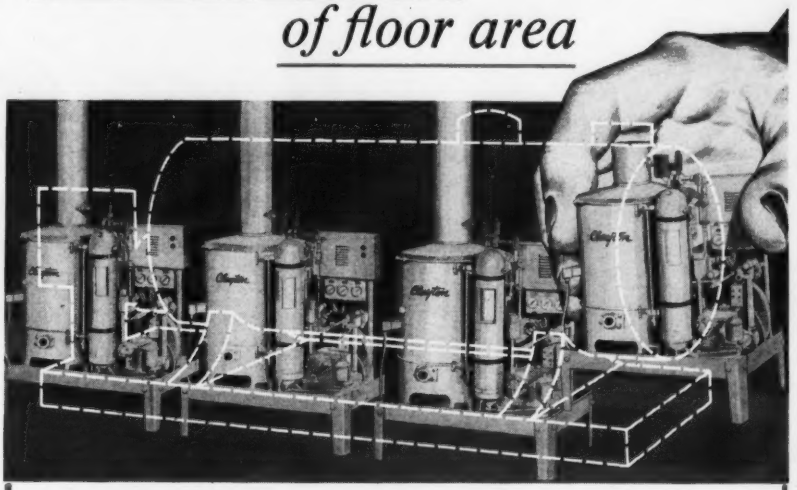
1. Labor is cut by 50%; fewer people do the same work.
2. Truck fleets required to haul vines to and from the viner stations are eliminated.
3. Night operations become less hazardous.

(*Continued on next page*)

For additional new developments of interest to growers and packers see pages that follow.

HERE'S HOW TO QUADRUPLE STEAM PRODUCTION...

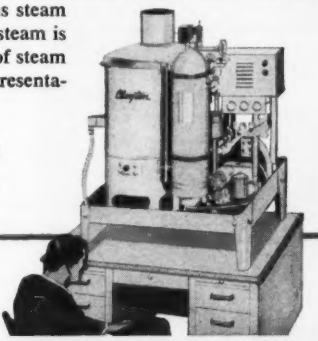
without expansion of floor area



Case history after case history proves that the story is the same. More and more smart business men are specifying Clayton Steam Generators. The reasons are many. Clayton's unique principle of controlled circulation is so efficient that a Clayton requires as little as 25% of the space of an ordinary boiler. Simple to operate too. Just push a button at the start of a shift and in three minutes the unit is at operating pressure. Furthermore, an operating Clayton (full of water) delivers up to 6½ HP per square foot of floor area with as little floor load as 130 pounds per square foot. A Clayton costs less to install... no expensive rigging, stacks or high freight costs.

Compactness is due to Clayton's *controlled circulation* feature which also eliminates drums, headers and other dangerous steam storage vessels. Steam is produced only as steam is demanded... reducing greatly the amount of steam or hot water in storage. Let a Clayton representative give you more facts.

Where Steam can Serve you Clayton can Serve you Best



Clayton STEAM GENERATOR

READ THE GUARANTEE THAT COUNTS!

Compare Clayton's 5-year published coil warranty covering material and labor.

Sirs: Please send us more information on Clayton Steam Generators.

Name_____

Company_____

Address_____

City_____ Zone____ State_____

We use steam for_____

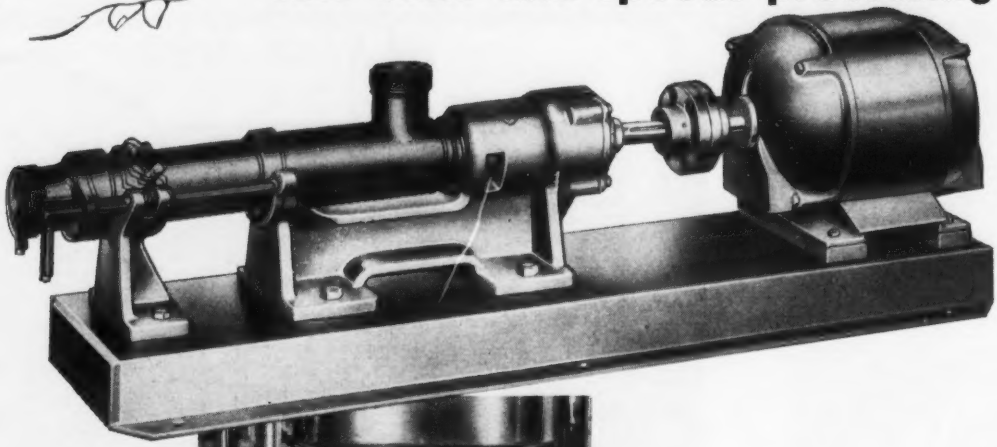
Send to: Clayton Manufacturing Company
409 403 N. Temple City Blvd., El Monte, California

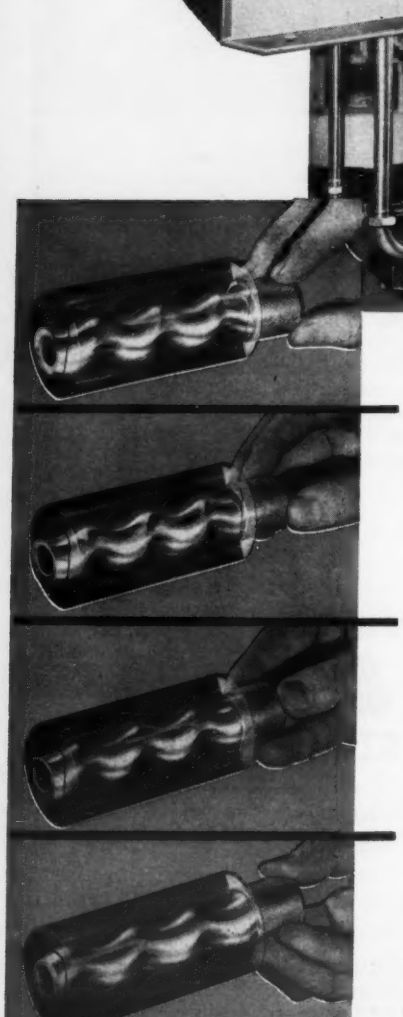
6129 on Reader Service Slip

Quick cleaning

MOYNO® FOOD PUMP

cuts costs and speeds processing!





"Progressing cavity" principle . . . pumps everything from hamburger to potato salad!

With simply-designed Moynos pumping your food products, workers formerly assigned to long, costly pump cleanups can be used for other tasks! The entire Moyno unit can be quickly dismantled for thorough, effective cleaning and re-assembled in minutes. Moynos are more sanitary on the job, too. Pumping element has smooth contours which can't lodge particles where bacteria might thrive. Bearings are isolated from pumping compartment to prevent contamination by lubricant.

Moynos operate on the "progressing cavity" principle, illustrated at left. The screw-like, reversible rotor revolves in a double threaded stator, creating the progressing cavities. Material moves smoothly along, without pulsation, aeration, agitation, disintegration or contamination! All wettable parts, except stator, are stainless steel. Stator may be stainless steel, synthetic rubber, odorless bakelite or other material—depending on service. Any food product that will move through a pipe can be pumped with a Moyno—even lumpy ones like fruit cake mix!

Learn more about Moyno—the quick-to-clean pump that food can't stump. Write today for Bulletin 30-FP!

ROBBINS & MYERS, INC.

SPRINGFIELD, OHIO / BRANTFORD, ONTARIO

R&M

6130 on Reader Service Slip

(*Continued from preceding page*)

4. Better utilization of personnel is possible; mechanics and supervisors need not split their time between field and station.
5. Mobility provides better control of overmature and immature peas from two different areas.
6. Machine is immune from effects of sun, weather or long hours.
7. Planting calculations are not bound by area-viner capacity factors.

Damage to peas from the harvester has been reported to be no greater than the average in the peas coming from the viners.

Pea harvester operated in wet fields while two tractors were required for the vine trucks.

How it operates

As the harvester moves through the field, a reel-type pickup gathers pea vines.

Paddles elevate the vines to the thrashing mechanism.

A series of horizontal paddles mounted vertically rub the vines against other paddles and screens, thrashing the pods. Thrashed vines are conveyed upward to the rear and discharged. Most of the peas are removed from the pods in the initial thrashing action.

Peas, thrashed pods, and remaining pods with peas intact are subject to a blast of air which removes the trash.

A pod thrasher then removes peas from the remaining pods.

Peas are discharged into a hopper and the pods are returned to a pod thrasher at the rear of the harvester.

Hoppers containing the peas are loaded on trucks and dumped into elevator buckets at the processing plant.

Normal fields will load a hopper in 15-20 minutes.

(Mobile pea harvester is manufactured by the Canning Machinery Division of The Food Machinery and Chemical Corporation, Hoopeston, Ill.)

For more information circle 6131 on Reader Service Slip.

How it works:
Single rows of pickle vines on six-foot centers are picked by the picker. Vines enter a slotted opening at center of the machine and are guided and lifted by pointed rubber fingers on cylindrical pickups (1). An endless chain-driven conveyor (2), operating at right angles to the path driven by the operator, causes the vines to be stretched out away from the center vine and forced into contact with the picking beds (3). Tubular rolls (4) attached to the conveyor are spaced to impart bouncing motion as they pass under the vine and contact the hanging cucumbers. This motion causes the cuke to snap off the vine and drop to a belt. Operating speed controls the size of the cuke picked. Cucumbers drop to the traveling belt over each bed and are conveyed upward to the sides of the picker. Delivery conveyors of woven metal at either side convey the cukes to the rear of the picker where a blast of air cleans away leaves and debris. Cukes drop into containers at the rear platform and are removed manually by the second member of the two-man team (other drives picker) required to operate picker. Rear platform has room for six standard bushel baskets so that picker need not be stopped to unload each container

Mechanical harvester provides
200% increased return to grower

Pickle picker proves productive

- Cucumber vines left in better condition than from hand pickers
- Size of pickle picked or left on vine controllable
- Knocks off overgrown pickles in stem row area frequently left by hand picking

R. D. McCORMICK,
Managing Editor

Peter Piper, pickle packer and all his brethren packers may now count on mechanical methods to cut picking costs.

A self-propelled tractor-driven mechanical harvester developed and field tested during the 1957-58 season is currently being offered for sale, lease or rental-purchase for the 1959 picking season.

Field trials during 1958 were held in Ohio, Michigan, and Wisconsin in cooperation with several packers, universities, experiment stations, and the National Pickle Packers Association.

Four packers operated the CRCO picker in 1958: Stokley-Van Camp, in the Celina, Ohio

(*Continued on next page*)

FOR BIG POWER use Maxi-Power

PARALLEL SHAFT HELICAL GEAR DRIVES

1. Heavy duty, reinforced design housing for permanent alignment, rigid shaft support.
2. One mesh per reduction—fewer moving parts.
3. Broad faced helical gearing—high quality, accurately hobbed for greater strength, durability. Uniform tooth deflection under load . . . no uneven wear.
4. Shafts firmly held in place. Positive gear location assures full tooth engagement across entire face.
5. Smooth, overlapping mesh, close backlash tolerances, no oil trap provide quiet operation, less heat generation.
6. Heavy duty, anti-friction bearings. Conservatively rated for wide range of operation.

Capacities to 1550 H.P.

★ Single, Double, Triple Reductions
★ Standard Ratios from 2.08 to 1 up to 360 to 1
★ 9 Shaft Arrangements
★ Available With Fabricated Steel Housing

There's more capacity, greater stamina and longer service life built into Foote Bros. Maxi-Power Parallel Shaft Drives. Simple, balanced design, fewer moving parts, heavy duty construction, efficient lubrication and conservative ratings make Maxi-Power drives the logical choice for critical applications and severest operating conditions.

You can depend on Maxi-Power Drives to produce maximum performance with minimum attention because they're built for just that kind of service.

Write for Engineering Manual MPB . . .
has complete details and data. There's no obligation!

100 YEARS SERVING INDUSTRY 1859-1959

FOOTE BROS.

Better Power Transmission Through Better Gears

FOOTE BROS. GEAR AND MACHINE CORPORATION
4553 SOUTH WESTERN BOULEVARD • CHICAGO 9, ILLINOIS

6132 on Reader Service Slip

SPROUT-WALDRON

Pointers

for Mixing and Blending • Size Reduction • Pelleting and Densifying • Size Classification • Bulk Materials Handling

Published in the interest of better processing by Sprout, Waldron & Co., Inc., Muncy, Pa.

STREAM SPLITTER KEEPS ATTRITION MILLS ON THE RUN

A few years ago the American Distilling Company installed a 26" Sprout-Waldron double runner attrition mill for the grinding of corn, milo, rye, barley malt and other ingredients used in the production of Bourbon Supreme Whiskey, corn and rye whiskeys and grain neutral spirits. The mill discharged into a mechanical handling system consisting of a screw conveyor and bucket elevator.

As the need for expansion became obvious it was decided to install an identical Sprout-Waldron attrition mill to operate in parallel with the existing machine, providing greater flow rate, reduced wear and simplified maintenance.

The key to the new system is a Sprout-Waldron Model VA-5 stream splitter with two outlets which divides the flow equally between the two attrition mills. Four whole grain storage bins discharge to a common Sprout-Waldron 12" x 18' screw conveyor. The center outlet of the conveyor allows the grain to pass over a magnetic separator on the way to the stream splitter. As the ground grain emerges from the attrition mills it is conveyed to the roof of the building by a Sprout-Waldron 50 hp 44" Pneu-Vac negative pressure system to another ground grain storage bin where it is held for further processing into quality whiskeys. For the facts on the Sprout-Waldron line of precision stream splitters, ask for Bulletin 137-B.

FOP/101

6133 on Reader Service Slip

(*Continued from preceding page*)

area; Libby, McNeill & Libby in the Rosebush, Michigan area; Green Bay Foods in the Green Bay, Wisconsin area; and Bond Pickle Co. in the Oconto, Wisconsin area.

How efficient?

A cost analysis of a typical operation by hand vs the harvester shows:

For mechanical picking —

Ten acres per 10-hour day, 30 acres per season on the basis of a picking every third day. Two men operate the picker at $1.00 hour for labor. Yield of 214 bushels per acre (average of a large packer in Michigan). Gas and oil costs of $75.00 per season. Machine depreciation of $750.00 per season taken over a ten-year period. Average maintenance of $50.00/yr for the 10 years.

For manual picking —

One and one-half acres per day average picked per man. Return to grower is 50% of crop picked at an average of $1.00 per bushel. Gang boss is paid $.75 per hour where thirty pickers are involved. Housing cost comparison can be made: son, recruiting and transportation, $60.00 per picker (includes insurance). This does not include the cost of transporting the workers to church or for shopping, doctor expenses, losses connected with labor camps, etc.

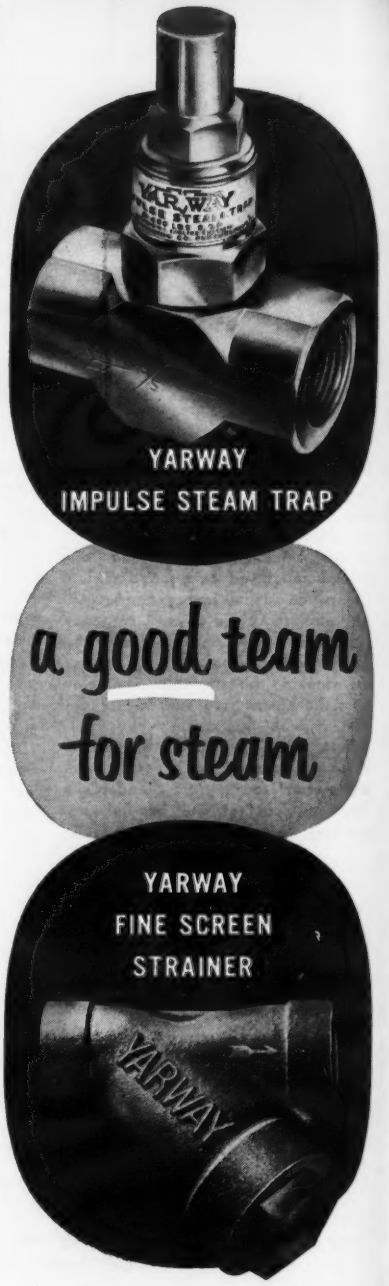
Based on 30 acres per machine per season, yielding 6420 bushels ($6420 @ $1.00 per bushel) the following picking costs $5.00 per picker per sea-

	6420
Mechanical picking	1475
Net cost to grower or 76% of crop value	$4945
	6420
Hand picking	4660
Net cost to grower or 27% of crop value	$1760

Net return, therefore, is 24 per cent of crop value picked by hand or 73 per cent by machine — over 200 per cent increased profit from the crop.

(CRCO Pickle Picker is manufactured by the Chisholm-Ryder Co. Inc., Niagara Falls. New York.)

For more information circle 6134 on Reader Service Slip.

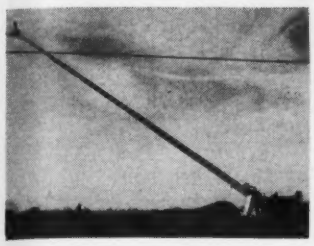


This Yarway team has scored high—over a million installed on all types of steam equipment. Stocked and sold by 270 Industrial Distributors. For free Steam Trap Book, write YARNALL-WARING CO., 126 Mermaid Ave., Philadelphia 18, Pa.

go YARWAY with confidence

6135 on Reader Service Slip

Saves 2/3 labor, ½ time for fruit, nut harvesting



Uses: Single boom tree shaker harvests walnuts, almonds, filberts, pecans, prunes, olives, other products which can be harvested by shaking.

Features: Requires only one man to operate vs cable shaking which requires 2 to 3 men in trees plus one driver. Requires about one half the time of cable shaking, with less damage to fruit and trees.

Description: Installs easily on regular tractors. Self-propelled unit available which converts to fork lift truck, loader bucket, brush rake, scraper blade operations.

(Hydraulic tree shakers with "Bear Hug" claw are manufactured by Gould Bros., Inc., 12570 N. Capitol Ave., San Jose 27, Calif.)

For more information circle 6136 on Reader Service Slip.

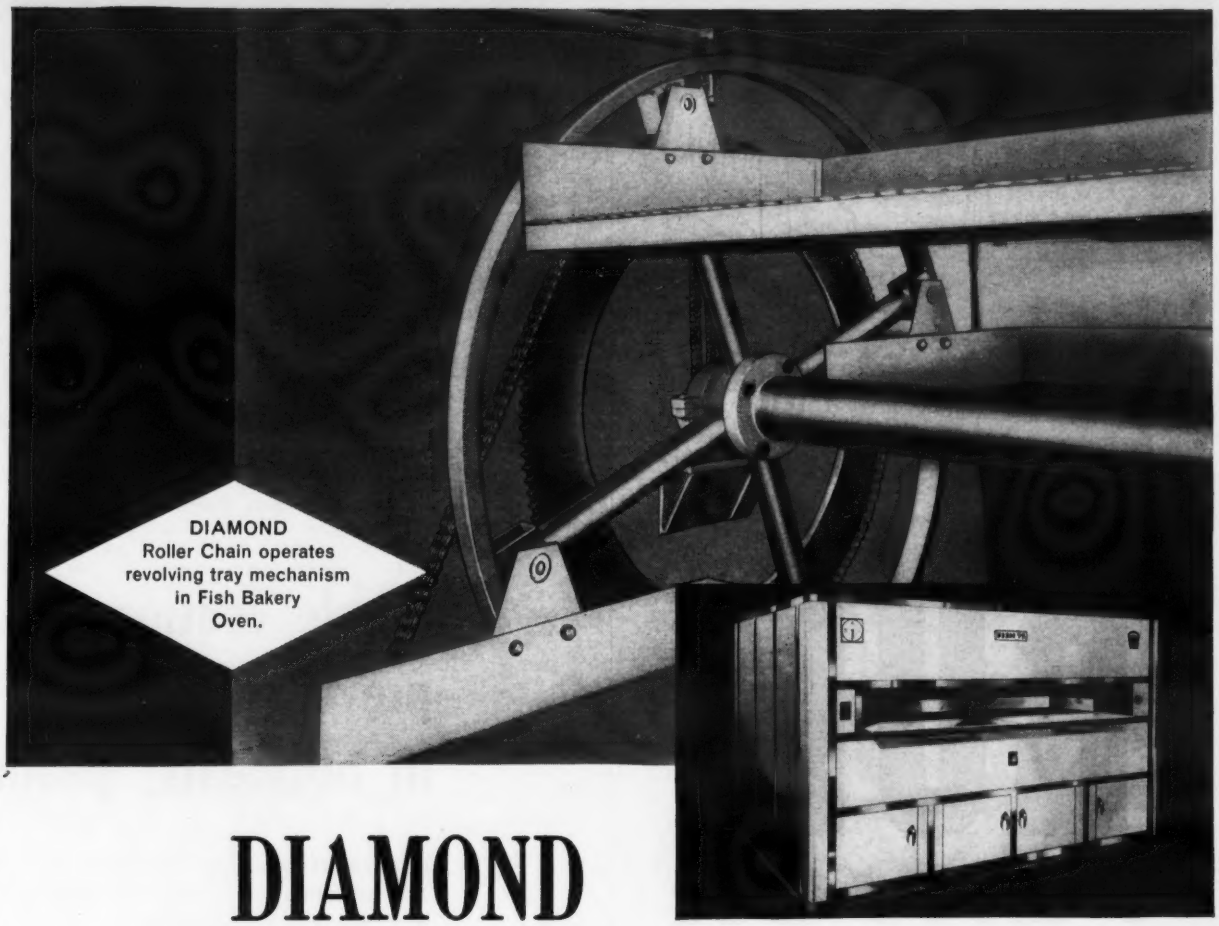
Analyzes killing action of pesticides, herbicides

Mode of action and chemistry of insecticides, fungicides, herbicides are detailed in 514-pg book. Two chapters are devoted to bioassay and chemical analysis of residues.

Use of radioisotopes in pesticide research and systemic insecticides in control programs are also discussed.

As in other "advances", authors are specialists in their subject. Not only do they review advances in research, but include critical evaluations of new developments.

("Advances in Pest Control", vol. 1, edited by R. L. Metcalf, is available for $11 from Interscience Publishers, Inc., 250 Fifth Ave., New York 1, New York.)



DIAMOND
ROLLER CHAIN
gives long, trouble-free service in FISH Ovens

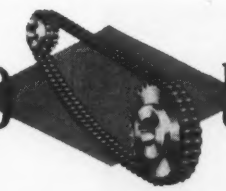
DIAMOND Roller Chain helps provide the smooth, carefully timed movement essential in mechanized ovens manufactured by Fish Equipment Co., Beloit, Wisconsin.

Vincent H. Lauer, Director of Sales says: "We have used DIAMOND Roller Chains in FISH ovens as a feature for many, many years. Many of the DIAMOND drives last as long as 25 years with no attention other than routine lubrication."

Whatever your application, you can rely on DIAMOND Roller Chain for long, efficient service. For power transmission, conveying, timing and synchronization . . . or any application where day-in, day-out dependability and low-cost operation is desired, call your local DIAMOND Distributor.

All types and sizes of DIAMOND Roller Chain are available for delivery from your DIAMOND Distributor's stock, *now*. Look under "Chains, Roller" in the Yellow Pages of your local telephone directory.

DIAMOND CHAIN COMPANY, INC.
A Subsidiary of American Steel Foundries
Dept. 410, 402 Kentucky Avenue, Indianapolis 7, Indiana
Offices and Distributors in All Principal Cities

DIAMOND  ROLLER CHAINS

6137 on Reader Service Slip

FLAVOREX

Jamaica Style

RUM FLAVOR

... puts the "YUM" in your product!

• Delight the palates of young pirates and their parents by adding Flavorex Rum Flavor to your product. Great for a *hearty accent!* Exquisitely exotic as an *extra touch of flavor!*

• Use Flavorex Rum Flavor in *baked goods, confections, puddings, eggnog mixes, ice cream,* and other foods. You'll be doubly rewarded these ways . . . perfect for your present formulas . . . helps earn consumers' preference for your product.

• Flavorex Jamaica Style Rum is a flavor concentrate of natural and synthetic esters produced in our own plant and blended by our masters of the art. Run a batch test. You'll discover that every fragrant drop adds mellow tropical sunshine to your product. Write for free sample, or place a trial order today.

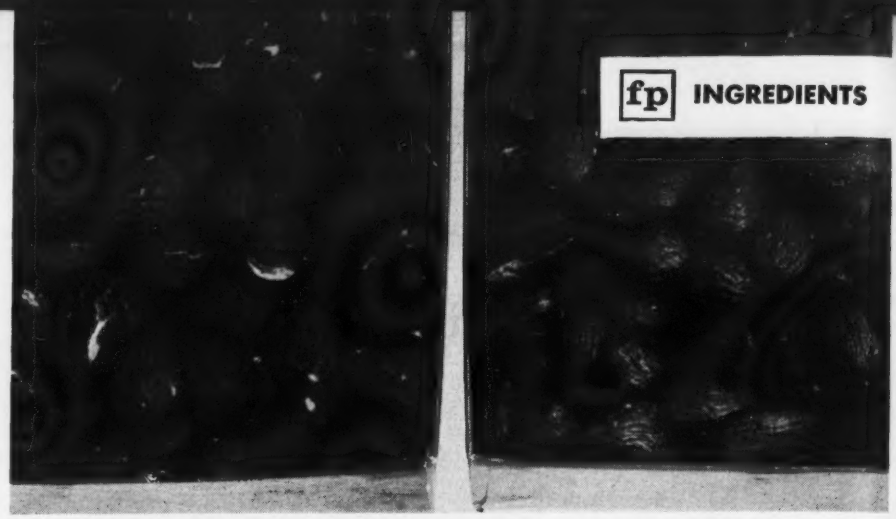
Rum Flavor No. B224 . . . $12 per gallon

Better Flavors for Better Products

FLAVOREX CO., INC.

302 S. CENTRAL AVE., BALTIMORE 2, MD.

6138 on Reader Service Slip



Left, uncoated dry-roasted almonds. Right, one per cent (dry basis) Cozeen coated dry-roasted almonds

Edible coating prevents staleness, rancidity in nutmeats, peanuts

H. B. COSLER, Quartermaster Food & Container Institute

J. J. ALIKONIS, Director, Al-Chem Laboratory, Inc., and

R. D. McCORMICK, Managing Editor

Shelf life of products using tree nuts and peanuts is limited by the short shelf life of the nut.

Almonds and peanuts, which are fairly stable when raw, develop staleness and rancidity when roasted.

Other nuts, such as pecans, English and black walnuts, become rancid quickly, even when raw, at temperatures of 60-70°F. Absorbed moisture causes sogginess; prolonged storage of the nuts requires refrigeration.

A new nutritive coating based on nontoxic acetoglycerides and zein, a nutritive fraction of corn, both soluble in alcohol, offers a method of retarding rancidity and moisture absorption under normal storage conditions.

Table I. Results of taste evaluation of 1% zein acetoglyceride coating of peanuts and almonds in ration bars (a).

	Peanuts		Almonds	
	Uncoated	Coated	Uncoated	Coated
Initial Rating	7.6	7.0	6.7	6.1
Number of testers	20	20	20	20
3 months at 100°F	5.0	6.5	4.9	5.9
6 months at 100°	rancid not tested	5.6	very rancid not tested	6.2
1 year at 70°F	-	-	4.5	5.3
18 months at 70°F	-	-	4.0	6.8
2 years at 70°F	-	-	not tested	5.9

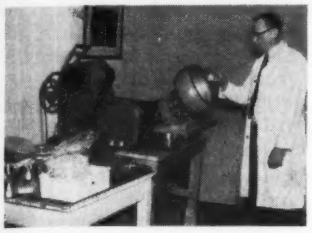
(a) Recipe based on 20% nuts, 80% chocolate moulded as 1 ounce bars, wrapped in cellophane. Rating scale: 9-Excellent; 8-Very good; 7-Good; 6-Below good, above fair; 5-Fair; 4-Below fair, above poor; 3-Poor; 2-Very poor; 1-Extremely poor

Shelf tests on pecan pieces have shown that a one per cent coating is effective even after accelerated storage for three months at 100°F and six months at room temperatures.

Uncoated pecans tested at the same time became rancid, soggy, and bad tasting after 26 days; after 35 days they were unacceptable.

Similar results have been reported for English walnuts and Spanish peanuts.

Taste tests were made on uncoated and one per cent zein-acetoglyceride coated peanuts and almonds for use



Pilot set-up for experimental coating the nuts shows Mr. Alikonis applying Cozeen to roasted nuts. Equipment shown includes: scales, Spanish peanuts, dry nut roaster, oil nut roaster and laboratory revolving pan

in sweet chocolate, enriched bars. Table I demonstrates the superiority of the coating in storage tests.

Pharmacological tests show the acetylated glycerides to be nontoxic and safe for use in limited quantities especially when unsaturated fats, such as nut and peanut oils and other liquid oils are present in the diet.

On the basis of these tests, the Surgeon General has approved the use of the coating, manufactured under the trade name Cozeen, for nuts, peanuts and confectionery for rations for the Armed Forces.

Since the acetoglycerides have other food uses, much scientific work awaits completion of pathology studies.

Official clearance from the FDA or other official agencies will be petitioned for limited use of acetoglycerides in foods. Under the new law (FOOD PROCESSING, October 1958) it will be necessary to seek such formal acceptance, since these substances were not on the

(*Continued on next page*)

Pro-80 Vital Gluten, new protein concentrate, will help your products move faster too

If you're considering a product improvement or a new product, you'd do well to investigate Pro-80 protein enrichment. Recognizing the increasing consumer preference for high protein foods, many successful food processors have turned to our Pro-80 Vital Gluten (80% pure wheat protein m.f.b.) to build greater food value into their products. They've been rewarded with additional volume. Possibly you will too.

Pro-80 adds food value to these and other foods

- *breads*
- *health foods*
- *macaroni products*
- *puddings*
- *cereals*
- *baby foods*

Pro-80, extracted from wheat, hydrates rapidly, blends smoothly, is bland and compatible—adds no taste or odor of its own. Write for more information regarding its many processing benefits.

SPECIAL COMMODITIES DIVISION

Minneapolis 26, Minnesota

General Mills

get more facts fast
SEND COUPON TODAY

Special Commodities Division
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Yes, I'm interested in opportunities with Pro-80 in the following fields:____

Name____

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Address____

City____ Zone____

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6139 on Reader Service Slip

ATLAS *Certified* COLORS

FOR EVERY PURPOSE

New

ATLENE

NON-SEPARATING TYPE
Powdered Certified Colors

100% BASIC COLOR BLENDS
that dissolve as a single color

for

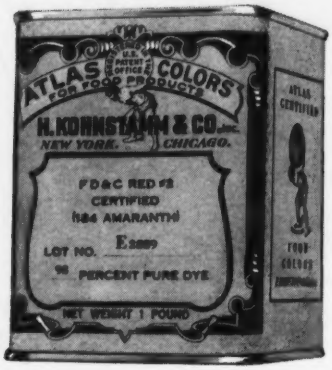
GELATINE DESSERTS
DRY DRINK POWDERS
and other types
DESSERTS and PUDDINGS

STOCK SHADES

ATLENE *Butterscotch Brown*
ATLENE *Cacao Brown (Chocolate Shade)*
ATLENE *Grape Shade*
ATLENE *Lime Shade*
ATLENE *Lemon & Lime Shade*
ATLENE *Raspberry Shade*
ATLENE *Root Beer Shade*
ATLENE *Medium Yellow (Egg Shade)*

also

"Custom Made" shades to suit the individual needs.



STANDARD

ATLAS CERTIFIED COLORS
(Powdered)

Industry's Standard for 105 Years

BASIC COLORS

HERCULES 100% BASIC COLOR BLENDS

SECONDARY SHADES

plus

many "Custom Made" blends to meet individual requirements.

also

SELF-MEASURING COLOR CUBES

PASTE COLORS

LIQUID COLORS

P. G. COLORS for Summer Coatings and Fillings

H K
SERVICE THROUGH CHEMISTRY

New

FLOLENE

CERTIFIED COLOR GRANULES
Non-Dusting Type

FLOLENE Color Granules dissolve readily and with minimum dusting. Thus the possibility of contaminating other products is lessened.

Available in the Following BASIC COLORS

FD&C	RED	#1
FD&C	RED	#2
FD&C	RED	#3
FD&C	RED	#4
FD&C	YELLOW	#5
FD&C	YELLOW	#6
FD&C	BLUE	#1
FD&C	VIOLET	#1

All other Basic Colors manufactured in powdered form.

FIRST PRODUCERS OF CERTIFIED COLORS — ESTABLISHED 1851

H. KOHNSTAMM & COMPANY Inc.

161 AVENUE OF THE AMERICAS, NEW YORK 13
11-13 E. ILLINOIS ST., CHICAGO 11 • 2632 E. 54 ST., HUNTINGTON PK., CALIF.
BRANCHES IN OTHER PRINCIPAL CITIES OF THE U.S.A. AND THROUGHOUT THE WORLD

6140 on Reader Service Slip

ingredients

(*Continued from preceding page*)

approved list issued by FDA (FOOD PROCESSING, January 1959).

Coating is applied to the nutmeats by tumbling in a revolving pan or cylinder. Although the coating solvent evaporates rapidly, it can be further speeded by blowing air over the nutmeats during tumbling.

Nuts may also be coated by spraying or mixing so long as a thorough continuous coating is attained and nutmeats are not broken.

Sample lots of Cozeen, for experimental purposes only, are available in one gallon lots from the manufacturer. A gallon contains approximately 2.7 pounds of solids.

For the recommended one per cent dry coating, three pints of coating solution is required to coat 100 pounds of nutmeats.

Al-Chem Laboratory, the manufacturer of Cozeen, can supply both coated and uncoated nuts for experimental purposes.

(Additional recommendations or copies of the paper, "Prevention of Staleness and Rancidity in Nutmeats and Peanuts" by H. B. Cosler, are available from Al-Chem Laboratory, Incorporated, 611-702 E. Locust St., Bloomington, Illinois.)

For more information circle 6141 on Reader Service Slip.

"I wish the Amalgamated Vegetable Pickers Union had waited until the tomato season was over before staging their strike."

For more information on product at right, circle 6142 see information request blank opposite last page.

Continuous mixer

(*Continued from page 34*)

Temperature controllable

The action is so violent that it takes 40 hp to drive the unit which has a rated capacity of 18,000-20,000 lb per hour.

In passing through the unit, mix will pick up to 6°F. Ordinarily, this small temperature rise is not serious.

However, when necessary, coolant can be circulated through the shaft, which is hollow. When additional temperature control is desired, jackets can be mounted on the cylindrical wall through which coolant is circulated.

Close tolerances are adhered to in the fabrication of the unit. The removable panel — see p. 34 — is cut out of a rough cylinder, fitted into place, then the interior of assembled cylinder and removable panel are machined to a perfectly smooth bore.

Self-cleaning

The unit is self-cleaning to a very high degree since there is no place for mix to accumulate on the smooth cylindrical walls. Also, centrifugal action prevents mix from accumulating on the shaft or hammers.

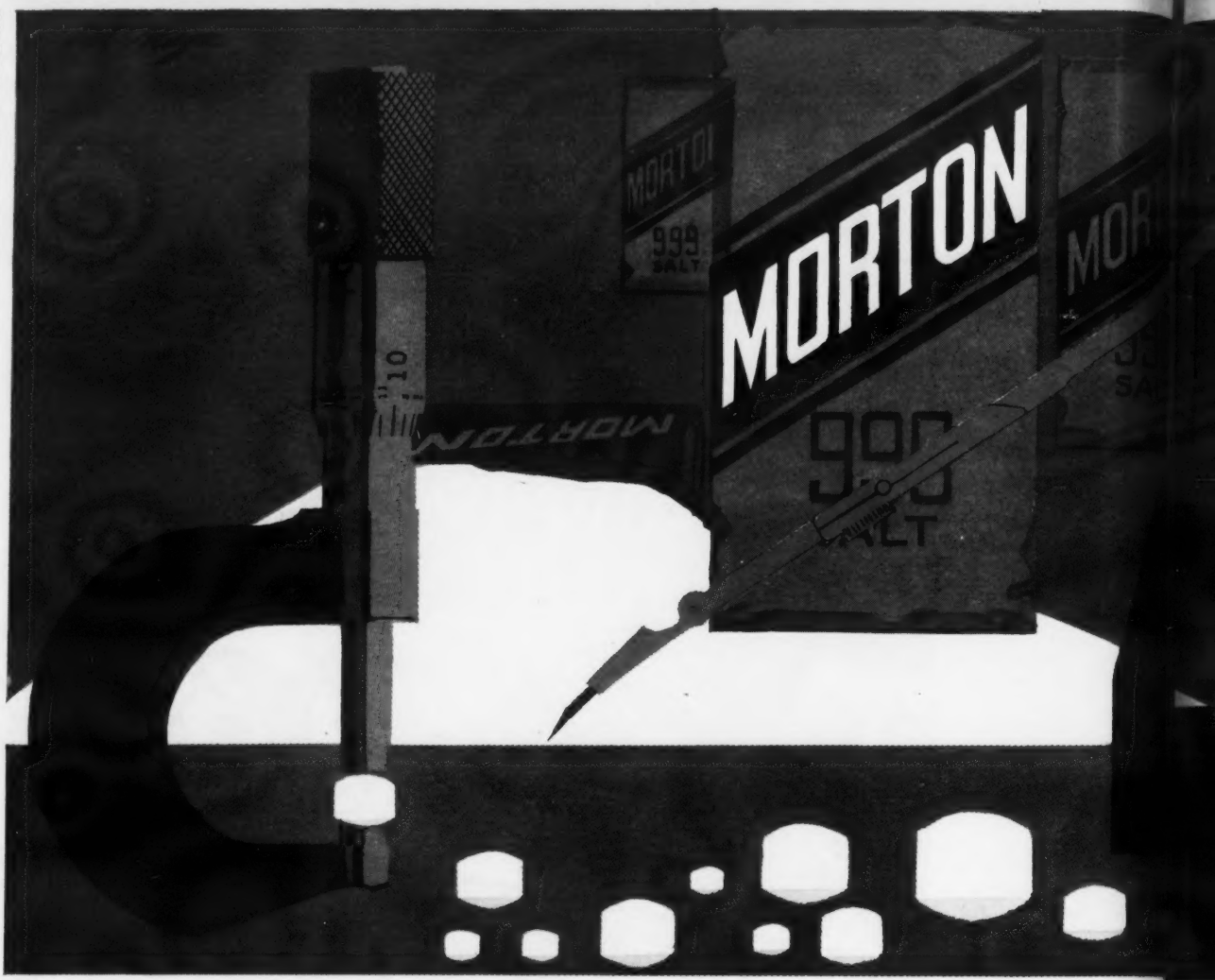
Another feature is the use of sanitary, quick disconnect seals at each end of the horizontal shaft. The entire rotating shaft can be easily removed whenever necessary for service.

Replacing the brush-type sifters and gyratory sifters with the Turbulizer has resulted in distinctly more uniform mix. It has also saved considerable floor space formerly occupied by the sifters and accessory conveying system.

Another advantage is the ease of cleaning. Formerly it took two men four hours to clean the sifters and accessory equipment. Now the job is accomplished in a fraction of the time.

(The high-speed continuous mixer called the Turbulizer is a development of the Strong Scott Mfg. Co., 451 Taft Street, N.E., Minneapolis, Minn.)

For more information circle 6143 on Reader Service Slip.



Only Morton offers you the right salt, in any form–

Morton '999' Salt is the highest purity salt commercially available everywhere in the United States. '999' is a low price, premium grade salt entirely free from bitter calcium and magnesium compounds that can distort flavor. Morton '999' is always 99.9% clean, pure sodium chloride, exceptionally low in the trace metals copper and iron.

What's more, '999' quality never varies from shipment to shipment whether you buy a bag or a carload.

Morton also offers you high purity '999' Salt in handy tablet form. You get tablets that are always the exact weight, size and blend you require for accurate flavor control.

Morton combination tablets are precision made to your exact requirements. You can order Morton Salt blended in unvarying amounts with ascorbic acid . . . spices . . . citric acid . . . sulphur . . . M.S.G. . . . calcium chloride and other flavoring agents. Tablets come in 10-grain to 400-grain sizes.

Morton offers a complete line of tested and approved dispensers to help you reduce labor costs, eliminate waste and assure better flavor control through accurate dispensing of seasonings and preservatives. Technicians are available to help you select and install the dispenser or brinemaker best suited to your needs . . . to assist with initial use and provide regular follow-up maintenance to assure efficient, trouble-free operation that saves you time and money.

All Dispensing and Brinemaking devices are installed and serviced by Scientific Dispensing Company Division of Morton Salt Company.

Corn sweeteners for frozen desserts described

A 12-page booklet describes the use and formulation of corn sweeteners in ice cream, soft-serve frozen specialties, sherbets and ices.

Effects of texture in the role of consumer preference is included along with tables showing corn sirup replacement equivalents for sucrose and dextrose in various percentages.

("Corn Sweeteners for Smoother Frozen Desserts" is available from Corn Products Sales Co., 17 Battery Place, New York 4, N.Y.)

For your copy simply circle 6145 on Reader Service Slip.

Offer price catalog of essential oils, colors, aromatics

Latest issue of the semi-annual Dodge & Olcott catalog of essential oils, certified colors, and aromatic chemicals has been released.

Booklet contains price listings and descriptions of product line including: aromatic chemicals, balsams, gums, concentrated citrus oils, oreoresins, terpeneless oils, vanilla concentrates and aldehydes.

(Copies of the 36-page booklet are available from Dodge & Olcott, Inc., 180 Varick St., New York 14, N. Y.)

For your copy simply circle 6146 on Reader Service Slip.

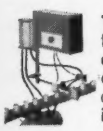
Three vanilla-like flavor components

Three compounds for inclusion in vanilla-flavored baked goods, ice cream powders and other foods offer variety of vanilla-flavor variations.

Crystavan is homogenous crystalline compound to lend new "vanilla note" to imitation powdered vanillas.

Vanatone is spray-dried flavor which imparts a vanilla-bean-like aroma, and produces a pleasing, mellow bouquet. (*Continued on next page*)

and dispensing service to meet your special needs



The amazing Flocron Liquid Dispenser works electronically—remote controls permit you to "dial" the exact amount of liquid ingredients required for various can sizes. Handles up to 300 units per minute. Can be operated on existing equipment without revising existing production lines.

The Salt Tablet Depositor automatically deposits salt tablets in as many as 700 cans a minute. Guaranteed accuracy. Automatic models work on a "no can, no tablet" and a "no tablet, line stops" basis. Depositors come in special sizes . . . will place tablets in narrow mouth bottles, cans and jars.

The Morton Model-E Brinemaker is specially designed to produce up to 800 gals. of brine per hour from readily available '999' Salt. No space-wasting storage tank needed. No need for costly shutdowns for cleaning out sludge or impurities.

The Bulk Salter Machine dispenses salt, sugar, M.S.G., and other seasonings in dry form. Serves up to 400 cans per minute—if no can is present, no seasoning is released. Machine can be filled and supervised by unskilled labor.

Write today for more information!

We'll be happy to send you more information about high purity Morton '999' Salt... the Model E. Brinemaker... Flocron Liquid Dispenser... Bulk Salter Machine or the Salt Tablet Depositor.

MORTON SALT COMPANY

INDUSTRIAL DIVISION

Dept. FP2, 110 No. Wacker Drive, Chicago 6, Illinois

6144 on Reader Service Slip

(Continued from preceding page)
Vanarine gives unique "vanillic" characteristic. It can be used where a coumarin-like flavoring is desired. It is also spray-dried.

(Vanilla additives are products of Fritzsche Brothers, Inc., 76 Ninth Ave., New York 11, New York.)

For more information circle 6148 on Reader Service Slip.

Pizza spices add zest to other foods

Seasoning base combines a number of typical Italian seasonings and spices into a blend called Pizza Spice. Besides its use in pizza recipes, it also is used to make economical salad dressings that blend well with salad greens.

Spice also can add piquancy to cheese specialties, cheese dips and spreads, and meat products.

(Gentry Pizza Spice is product of Gentry Div. of Consolidated Foods Corp., P. O. Box 2076, Terminal Annex, Los Angeles 54, Calif.)

For more information circle 6149 on Reader Service Slip.

Offers flavor engineering service

Although the manufacturer is continually building more nutrition into feeds he frequently overlooks the need for aroma to create animal acceptance.

Many feeds are over-flavored and appeal to the feeder but may cause taste fatigue in the animal.

The answer lies in "engineering" an aroma and flavor mutually acceptable to animal and feeder.

(Such a service is being offered free of charge to feed manufacturers by Taste Engineering, Inc. Further details may be obtained by writing Taste Engineering at 1401 W. Hubbard Street, Chicago 22, Illinois.)

For more information circle 6150 on Reader Service Slip.

You don't have to consult a French chef for the secret of making a good food product taste better. Simply start using Merck MSG. Merck is your new basic source for this flavor-enhancing ingredient. Merck's technically advanced manufacturing process assures dependable delivery in the quantities you require. Rigid quality-control procedures provide lot-to-lot uniformity of monosodium glutamate 99+% pure. And Merck's Food Research and Technical Service Staff stands ready to help you at all times. Get complete information on how Merck MSG can add the gourmet's touch to your products by contacting your nearest Merck Sales Office or writing directly to Rahway.

MSG—a product of MERCK

MERCK & CO., INC., RAHWAY, NEW JERSEY

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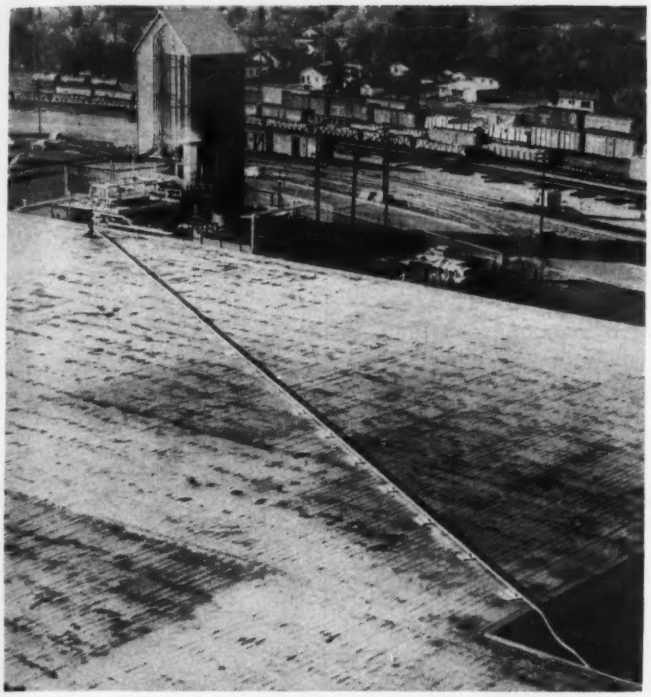


Cull walnuts at Diamond Walnut Growers are conveyed 1000 ft through this 4-inch pipe on roof of processing building, to big silos in building in background. Line rests on rollers to eliminate daily contraction-expansion problems

Conveys difficult product without line plugging

- Pneumatically transports oily walnut mixtures and culls 1000 ft horizontally, 100 ft up by pushbutton
- Automatic start-stop action clears line plugging

Problem: One bugaboo in construction of "horizontal" plants is the long distances over which materials must be conveyed. At Diamond Walnut Growers, Inc., Stockton, Calif., for instance, it is convenient to convey all shells and culls to a central location.

This involves movement of material over spans as long as 1000 ft.

Air conveying was considered the most economical method, but there was some skepticism about handling specific materials, particularly "Armstrong" mixture. This is a fine, mealy, oily mixture of broken nut meats with finely divided shell, used in Armstrong process of oil and meal recovery.

The oily meal could bridge and plug the pipes, causing an unholy mess—especially over long lengths of pipe.

In the old Los Angeles plant, shell material had been moved short distances through 6- to 12-inch pipe by a vacu-

(*Continued on next page*)

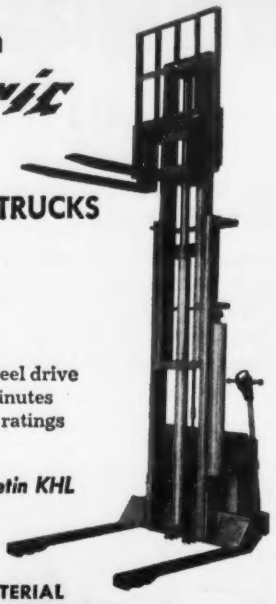
modernize with
HydroLectric

A GREAT NAME IN LIFT TRUCKS

- Two driving wheels instead of one
- Braking with handle in any position
- Automatic parking brake (optional)
- Sealed alloy gears instead of chains
- Sealed ball-bearing rollers in masts
- 100% more steering ease with two wheel drive
- Power unit removal complete in 20 minutes
- Greater tire capacity equivalent load ratings

LIFT TRUCKS INC. W.W.W. STUEBING CINCINNATI

• *Write for Bulletin KHL*



A TRUCK FOR EVERY PURPOSE AND MATERIAL

LIFT TRUCKS, INC.
CINCINNATI 14, OHIO

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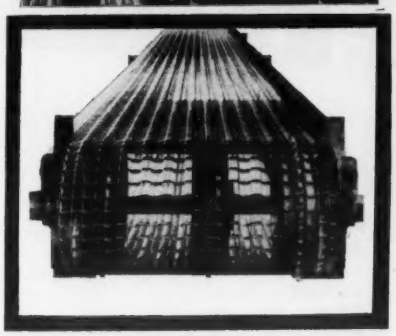
Easily Sterilized While in Motion
by One Man
LA PORTE
FLEXIBLE STEEL CONVEYOR BELTING

The open mesh feature of the La Porte belting makes sterilizing simple and easy. One man can do the job with a steam gun in minutes, eliminating down time and extra labor costs.

In addition, it assures positive drive on the sprocket, and free circulation of air and liquids around products in process.

Made of galvanized steel of the best quality, La Porte belting is available in ½" x 1", or 1" x 1" in any length and practically any width.



LA PORTE

Ask your Mill Supplier or write for illustrated literature, prices.

MAT AND MFG. CO.
BOX 124 Dept. A La Porte, Indiana

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Permaglas® Storage Structures eliminate packaging costs

Texas Corporation maintains contamination-free operation in changing from costly packaging to economical bulk handling.

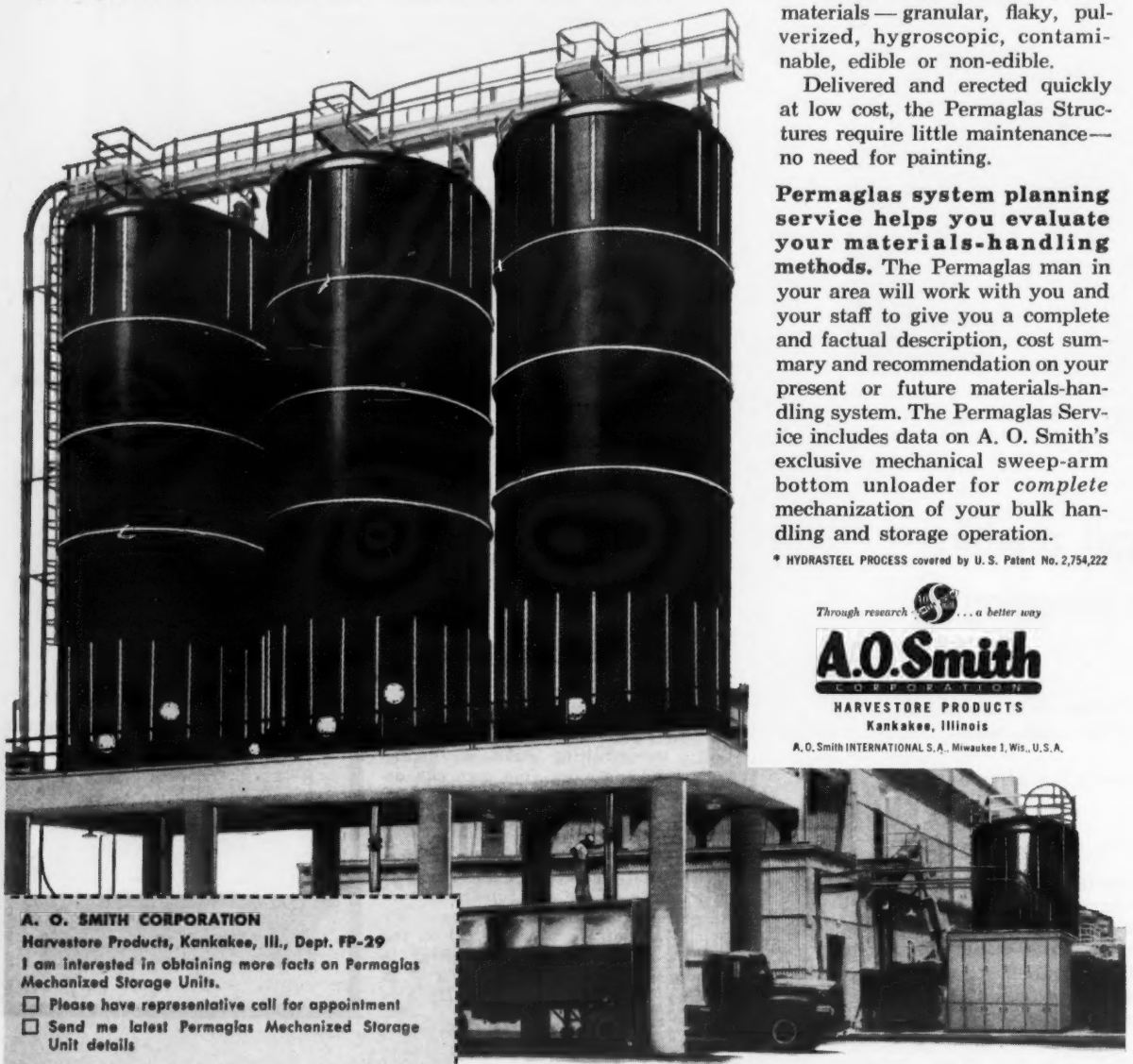
Towering above the flat Texas Plain at Big Spring—four Permaglas Storage Structures testify to the wisdom of the change from packaged to bulk materials-handling and storage.

Specified by Blaw-Knox engineers, materials-handling consultants for a wide variety of industries such as foodstuffs, chemicals, feed ingredients, rubber, plastics and pharmaceuticals — the Permaglas Structures met all requirements. These steel structures — glass-protected inside and out* safeguard products from contamination and discoloration . . . and are ideal for storing bulk materials — granular, flaky, pulverized, hygroscopic, contaminable, edible or non-edible.

Delivered and erected quickly at low cost, the Permaglas Structures require little maintenance—no need for painting.

Permaglas system planning service helps you evaluate your materials-handling methods. The Permaglas man in your area will work with you and your staff to give you a complete and factual description, cost summary and recommendation on your present or future materials-handling system. The Permaglas Service includes data on A. O. Smith's exclusive mechanical sweep-arm bottom unloader for *complete* mechanization of your bulk handling and storage operation.

* HYDRASTEEL PROCESS covered by U. S. Patent No. 2,754,222



Through research ... *a better way*

A.O.Smith
CORPORATION
HARVESTORE PRODUCTS
Kankakee, Illinois
A. O. Smith INTERNATIONAL S.A., Milwaukee 1, Wis., U.S.A.

Cosden Petroleum Corporation's three 20' x 50' Permaglas Bulk Storage Structures are loaded by pneumatic conveyor. They discharge ⅛" cube polystyrene molding pellets by gravity into bulk transfer trucks below. A fourth 14' x 15' Permaglas Structure safely stores crumb rubber.

A. O. SMITH CORPORATION
Harvestore Products, Kankakee, Ill., Dept. FP-29
I am interested in obtaining more facts on Permaglas Mechanized Storage Units.
☐ Please have representative call for appointment
☐ Send me latest Permaglas Mechanized Storage Unit details

Name .....
Firm .....
Address .....
City .....Zone .....State .....

6153 on Reader Service Slip

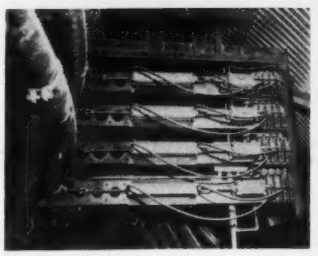
(*Continued from preceding page*)

um dust collection system.

At the Stockton plant, it would have been impractical to maintain vacuum and large diameter pipes over the long distances required.

Solution: An air conveying system employing relatively low velocities now moves shell, meal, and culls through 3- and 4-inch standard weight tubing throughout the plant.

Pneumatic system utilizes pressures in range of 7 to 9 psi, with volumes of 300 to 400 cfm. One 15-hp motor per line moves 2 to 4 tons per hour of material which varies widely in density (from 18 to 40 lb per cu ft).



One operator at control panel in basement can switch any of four products from plant via pipes (top photo) to any of four 100-ft high bins through system of solenoid-operated valves (lower photo) located at top of silos

Piping, with six-foot-radius bends, is suspended overhead so as not to interfere with other plant activity. One line, carrying culls from an air separator to storage bins on other side of plant, travels 1000 ft over roof of big processing building (See photo).

Results: Walnut shells, culls, and meal are transported without line plugging and with low power requirements.

A pressure safety switch is used in each line so that if line begins to plug, the pres-

(*Continued on page 56*)

Plants, Companies, Personalities

Felton Chemical Co.

Brooklyn, N. Y., has appointed Dr. William J. Considine research director and head of the Analytical Department. He was formerly engaged in organic research with the Sloan-Kettering Institute for Cancer Research and the Squibb Institute.

Hoffmann-La Roche

Nutley, N. J., has appointed Dr. Jack C. Bauernfeind director of Food and Agricultural Products Development. He has been Roche's director of Applied Nutrition.

Durkee Famous Foods

Div. of The Glidden Company, Cleveland, Ohio, have named W. M. Cochran research and technical service director. He will be responsible for sales and service, product development and improvement, research, quality control and product composition, will direct activities of all Durkee research laboratories and will work closely with managers, sales managers and production departments of all Durkee plants.

Nesbitt Fruit Products, Inc.

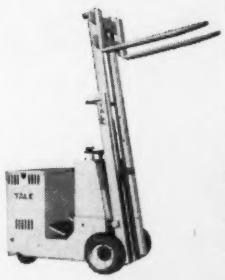
has new, stainless-steel-equipped plant in operation in Kansas City, Mo. Site was selected as national shipping hub. Plant manufactures complete line of fountain fruit drinks, flavors, toppings and franchise orange drink concentrate.

(*More on page* 77)

For more information on product at right, circle 6154 see information request blank opposite last page.

A YALE PRODUCT FOR THE FOOD INDUSTRY

ONE YALE TRUCK DOES THREE JOBS ECONOMICALLY



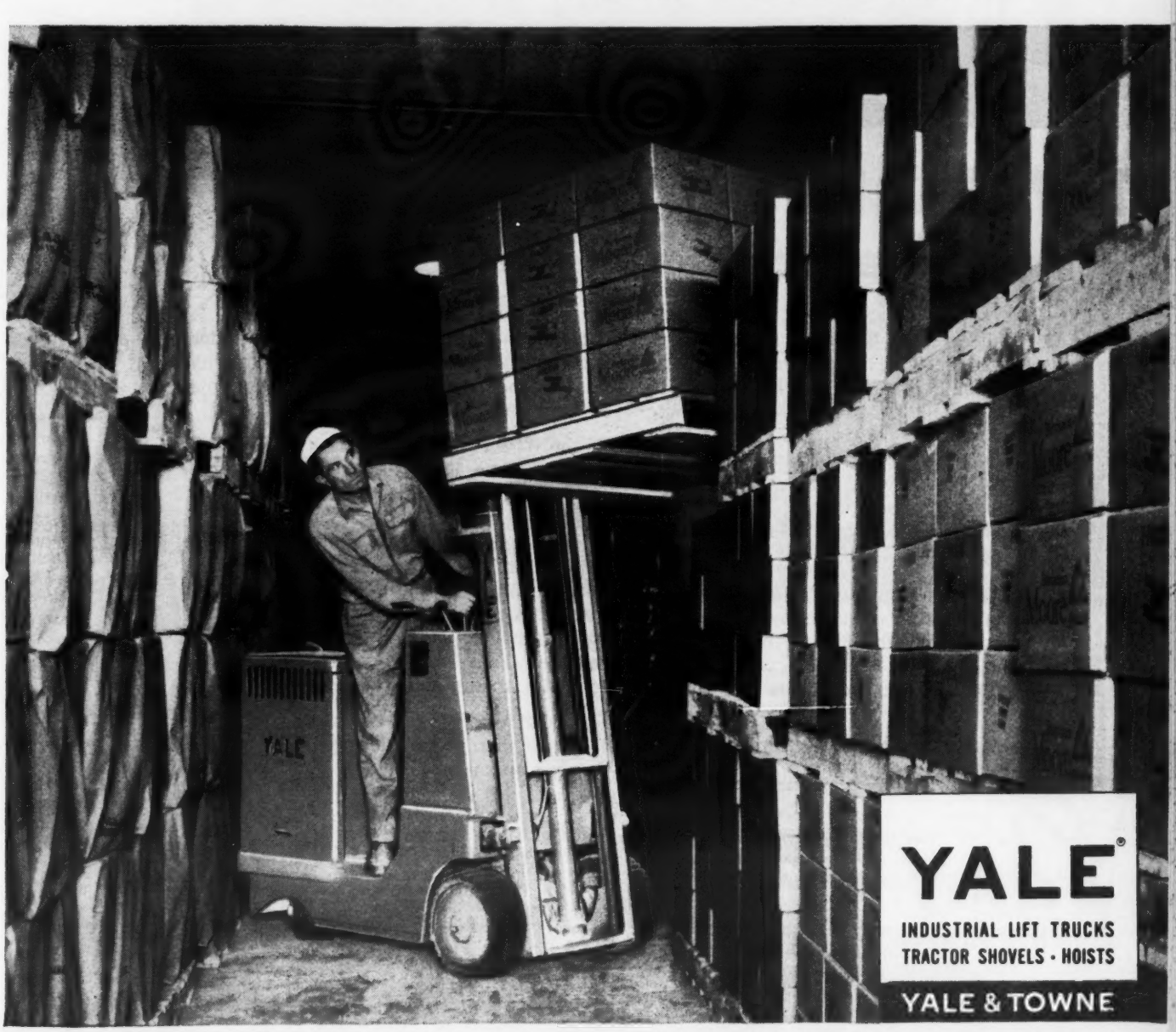
K-46 equally efficient in warehousing, on loading ramp, for mounting and dismounting operations

If your requirements call for a one-truck fleet, the versatile Yale K-46 is the truck for you!

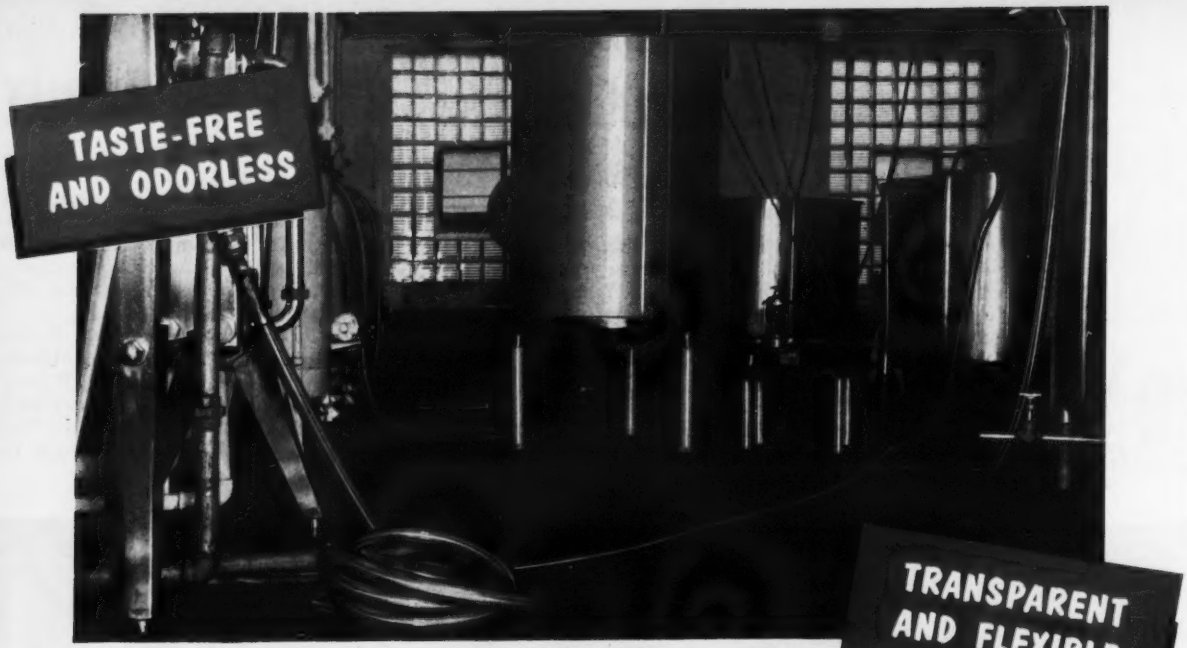
Three features give this economical Yale truck an extraordinary degree of usefulness. *Compactness* makes it a good narrow-aisle truck. *Maneuverability* makes it the perfect truck for loading and unloading on the delivery ramp. *Standup cockpit* permits easy, fast mounting and dismounting... gives the driver a clearer view for loading operations and aisle movement.

The K-46 is the ideal truck for profitable short cycle operations. Compact as it is, this economical truck has *all* the features of the large Yale electric trucks. Exclusive Magnetic Cam-O-Tactor for controlled acceleration and smooth travel—rugged durability—low-cost operation—dead-man control and other safety features. Capacities, 2,000 and 3,000 lbs.

For information about this stand-up electric truck, a cost-cutter in Yale's line of electric trucks (capacities 1,000 to 200,000 lbs.), call your Yale representative, or write for brochure #5112. The Yale & Towne Manufacturing Co., Yale Materials Handling Division, Philadelphia 15, Pennsylvania, Dept. KT 1-V.



Yale Materials Handling Division, a division of The Yale & Towne Manufacturing Company. **Manufacturing Plants:** Philadelphia, Pa., San Leandro, Calif., Forrest City, Ark. **Products:** Gasoline, Electric, Diesel and LP-Gas Industrial Lift Trucks • Worksavers • Warehousers • Hand Trucks • Industrial Tractor Shovels • Hand, Air and Electric Hoists



TYGON B44-3
food and beverage hose

The Golden Age Beverage Co., Inc., of Akron, Ohio, franchised bottlers and distributors of Pepsi-Cola, use Tygon Formulation B44-3 Transparent Flexible Plastic Tubing extensively in their Pepsi-Cola operation. Liquid sugar and syrups are piped to process vats, prepared mixes are pumped to storage tanks . . . all through 2" i.d. x 2½" o.d. Tygon B44-3 Food and Beverage hose.

Tygon B44-3 Tubing was chosen for this operation because of its many outstanding advantages over other piping mediums. For example, because it is non-contaminating and totally inert to food acids and alkalis, there is no possibility of flavor taint or odor resulting from its use. Its glass-like clarity enables operators to visually check contents at any point.

Tygon B44-3's flexibility makes it adaptable to any layout. It can be used in long continuous runs without extra joints or couplings, and if desired, hoses may be interchanged or simply moved from one application to another. The highly polished bore permits fast, thorough cleansing—Tygon lines may be uncoupled, washed or steam flushed — and be back in service in minutes. Fifty-five bore sizes from 1/16" to 3" i.d. insure a size for every need.

Consider for a minute how taste-free, odorless, transparent flexible "piping" can benefit your operation . . .

Send for Bulletin T-97. It's yours for the asking and gives the complete story on Tygon B44-3.

Plastics and Synthetics Division

U. S. STONEWARE
AKRON 9, OHIO

0465E

6155 on Reader Service Slip

material handling

(*Continued from page 54*)

sure will exceed a preset limit. This pressure rise automatically stops the rotary feed valve, which does not start again until after pressure has dropped sufficiently — usually after several seconds.

When feed valve stops, there is enough reserve pressure to blow the line clear—but no new material is added until pressure drops to a preset low limit. In effect, line plugging is thus stopped before it starts.

Benefits for other products

The basic characteristics of the system at Diamond Walnut have also been successfully applied for handling food products which are subject to damage during conveying—particularly sugar.

System uses lower velocities than used in vacuum and older pneumatic systems.

This results in less abrasion of particles and minimizes product damage, causes fewer fines.

In one large sugar plant, tests were made to compare the amount of abrasion to sugar through two different pneumatic pressure systems. Sugar conveyed in their older pneumatic system contained seven to eight per cent fines (particles passed through 100-mesh screen).

When conveyed in lower velocity system (similar to one at Diamond Walnut) only around one per cent of sugar passed through 100-mesh screen.

Same low velocity system is also used on a number of bulk tank trucks for sugar delivery. This saves the individual processor the cost of installing a pressure system in his plant for the unloading system.

Sugar is blown to roof-top tanks by the truck blower, and feeds to plant operations by gravity system.

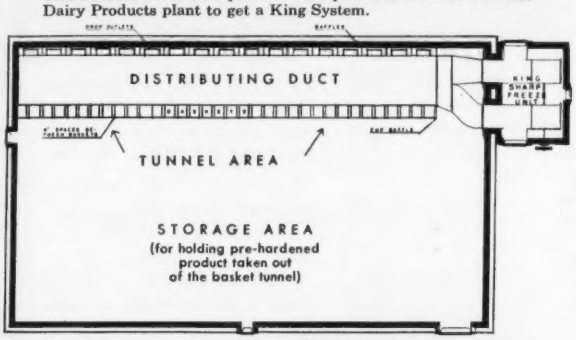
(Air conveying systems described above are development of Albert Air Conveyor Corp., 50 Drumm St., San Francisco, Calif.)

For more information circle 6156 on Reader Service Slip.

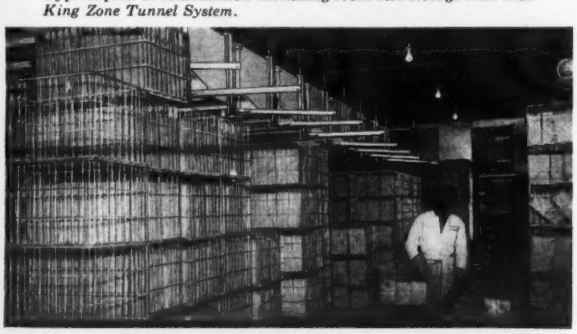
HARDENING TIME REDUCED 75% WITH KING ZONE TUNNEL

Midwest Dairy Products, a division of City Products Corp., has recently converted three plants, Memphis, Tenn., Ruston, La., Duquoin, Ill., to *King Sharp Freeze and Zone Tunnel Systems*. According to Thomas Cartwright, Chief Engineer of Midwest Dairy Products, "the *King System* with the *King Zone Tunnel*, has decreased hardening time from 36-48 hours to 8-10 hours . . . (and) increased the hardening room storage capacity by 25% to 30% due to the stacking procedure used." Mr. Cartwright also pointed out that the flexibility of the *King System* combined with the *King Zone Tunnel* was particularly desirable because "it can be added to without a lot of capital expense."

This Fortune Ice Cream plant in Memphis was the first Midwest Dairy Products plant to get a King System.



Typical plan of combination hardening room and storage area with *King Zone Tunnel System*.



Section view of *King Zone Tunnel* showing basket stacking arrangement. *Air Blast* through product produces rapid hardening and improved quality.

Write for *detailed technical bulletins. 50 years experience is at your service.*

KING ZONE TUNNEL SYSTEM

King COMPANY OF OWATONNA

911 North Cedar Street • Owatonna, Minnesota

6157 on Reader Service Slip

New Developments in fork lift trucks

Holding tilted loads steady . . . new stabilizer attachment is recommended for unstable loads of soft drink bottles or any other loads that cannot be nested or tied together. Feature is especially useful when loading highway trucks with slanted decks.

Stabilizer has three sponge-rubber-lined pads that clamp hydraulically atop such loads, completely eliminating breakage, even with outward tilts as great as 11 degrees.

Stabilizer's vertical stroke is 24 in, ranging from minimum opening of 40 in above forks to 64 in maximum. Clamping area is 34 in sq. Because arms of stabilizer are mounted on pivots, it can handle loads with varying case or bottle heights.

All controls for operating stabilizer are located in fork truck's cab.

(Load-stabilizer attachment for company's electric fork-lift trucks is development of Lewis-Shepard Products, Inc., 125 Walnut St., Watertown 72, Massachusetts.)

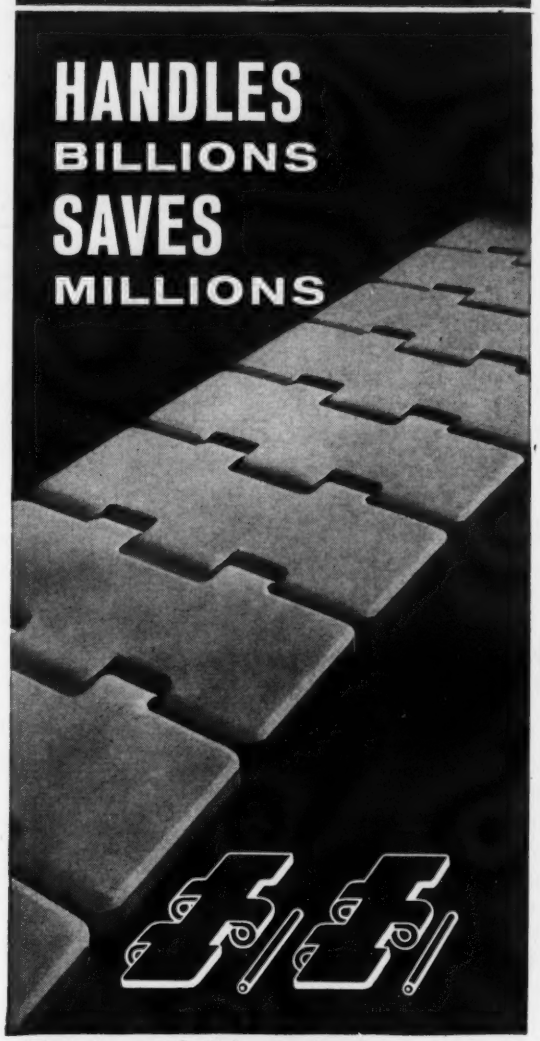
For more information circle 6158 on Reader Service Slip.

Weighing attachment . . . of 5000-lb capacity, precise to within 10 lb on 3000-, 4000- and 5000-lb fork-lift trucks, is highly practical for checkweighing

(*Continued on page 59*)

Another PLUS value...

HANDLES BILLIONS SAVES MILLIONS



That's the record piled up by Rex, the *original* TableTop chain. In breweries, food processing plants and packaging handling operations, it has handled *billions* of containers...saved *millions* in man-hours, money, materials and maintenance.

TableTop is simplicity itself...just a one-piece platform link and pin. Smooth, beveled link edges assure tip-free transfers.

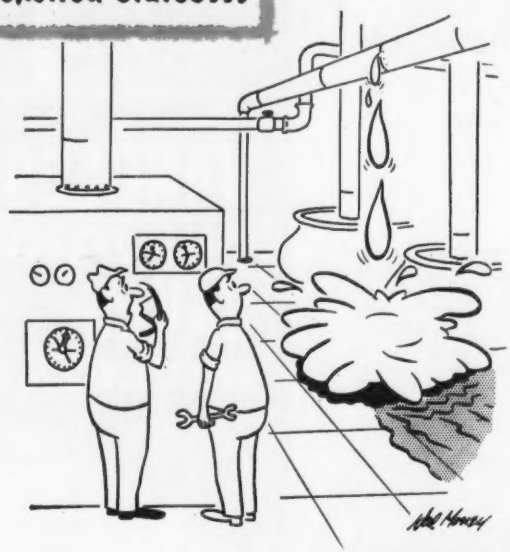
See your Rex Distributor or write Chain Belt Company, 4699 W. Greenfield Ave., Milwaukee 1, Wis.

REX®

TABLETOP® CHAIN

6159 on Reader Service Slip

Life in these excited states...



"I can't stand that constant drip-drip-drip!"

Corrosion got the drop on you?

Little drips can mean big losses... repairs, downtime, ruined equipment. You can put an end to 85 to 100% of these problems with Ace chemical-resistant rubber and plastic piping, valves, pumps, tanks and other equipment. American Hard Rubber Company's 108 years of experience is at your service.

RIVICLOR *for ageless strength*

All-purpose rigid PVC. Sched. 40, 80 & 120, ½ to 4". Threaded or socket-weld fittings. Valves ½ to 2". NSF-approved. *Bul. CE-56.*

NEW *ACE Gear Pump*

Improved design... now 12 gpm. All wetted parts acid-resistant, wear-resistant Ace hard rubber. Finest available. *Bul. CE-55.*

SUPPLEX *tops in economy*

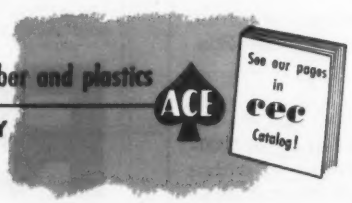
Flexible poly pipe, ideal for water lines, drains, underground pipe or conduit. Sizes ½ to 2", long coils, NSF-approved for drinking water. *Bul. CE-57.*

VALVE HEADQUARTERS

World's best chemical valves ... at moderate prices. All-plastic, rubber-lined, or all-hard-rubber. ⅛" pet cocks to 24" gate valves.

ACE processing equipment of rubber and plastics

AMERICAN HARD RUBBER COMPANY
DIVISION OF AMERACE CORPORATION
Ace Road • Butler, New Jersey



6160 on Reader Service Slip

Rustproof casters on Frito's soaking vats . . .

Keep Heavy Loads Moving on Precise Process Schedule

In the manufacture of "Fritos," nationally distributed corn chips, 10-ft, stainless steel vats of more than 180-gal capacity are in constant use — each at a different stage of the 8-12 hr corn soaking process.

Because this is an unusually precise mass production operation, one misgauge in timing or breakdown of a soaking vat probably would shut down the complete line until some correction was made.

To eliminate the possibility of production delays, each vat is equipped with double ball-bearing swivel casters. Four casters per vat permit precise positioning at different machines for filling or unloading.

Maneuverability is such that even when vats are fully loaded to over 1300 lb, they can easily be moved and parked by one man.

After each (daily) use cycle, each vat is carefully cleaned and washed down, and casters and wheels are subjected to drenching water baths.

Because of thorough cadmium plating of all metal parts and the non-rusting character of the 8-in-diam, roller bearing, hard-tread "Plaskite" wheels, no parts of casters are affected.

Plaskite wheels also have proved easy on the floors. Each vat follows relatively the same path across the plant each day, yet months of repeating this work cycle produce no ruts or abrasions.

Following months of successful testing in actual use at Frito's Dallas branch, the one-man castered vats are now in use at other Frito plants.

(Faultless 931-8 double ball bearing swivel casters used on The Frito Company's soaking vats are manufactured by Faultless Caster Corporation, 1947 Clarence St., Evansville 7, Indiana.)

For more information circle 6161 on Reader Service Slip.

When filled with cooked corn and soak water, vat weighs over 1300 lb — yet swivel casters permit easy one-man handling

VACUUM

LAMMERT PUMPS

No matter what you need vacuum for, you will get dependable service from automatically lubricated Lammert pumps. Capacities—4.3 to 225 cubic feet per minute. From medium to high vacuum (up to 20 microns of barometer).

Write for catalog showing the complete line, including specifications, of Lammert pumps and compressors.

LAMMERT & MANN CO., INC.

1753 Walnut Street, Chicago 12, Illinois, SEeley 3-0383

6162 on Reader Service Slip

LINK-BELT
liquid vibrating screens

FIBROUS SOLIDS are removed from beet waste water by Link-Belt screen at a Midwest cannery. Water is used for spray irrigation.

Separate solids from waste water at low cost

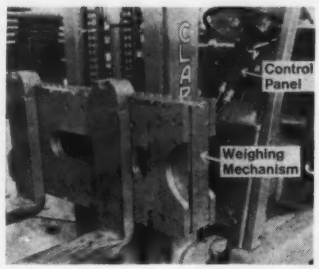
More and more food processors are turning to Link-Belt liquid vibrating screens for efficient, low-cost reclamation of solids . . . for reduction of stream pollution. Their high-intensity, accurately controlled vibration permits fast, effective separation of solids from large volumes of liquid without blinding—can be easily adjusted to meet varying conditions. Write for Book 2777.

LINK-BELT

LIQUID VIBRATING SCREENS 14.824

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7.

6163 on Reader Service Slip



(*Continued from page 57*)

receivables, weighing intraplant shipments, inventory control by weight, batch process weighing and checkweighing freight shipments. Use of truck-mounted attachment reduces travel and eliminates frequent pickups and setdowns required when floor scales are used.

Weighing mechanism, mounted between upright and fork plate, has no mechanical linkages, knife edges or moving parts. Accuracy is not affected by position of load, even when load is carried on one fork. Controls, including weight indicator, are on truck's steering column, within fingertip reach of operator.

A zeroing out control permits operator to discount weight of pellets or containers if only net weight of load is desired. Circuitry is designed for rugged industrial use. Overload stops protect system from severe shocks.

(Weighing attachment for 3000-, 4000- and 5000-lb "Clarklift" model trucks is joint development of Baldwin-Lima-Hamilton Corporation, 940 Simpson St., Philadelphia 42, Pa., and Clark Equipment Company, Industrial Truck Division, 1921 Escote St., Battle Creek, Mich.)

For more information circle 6164 on Reader Service Slip.

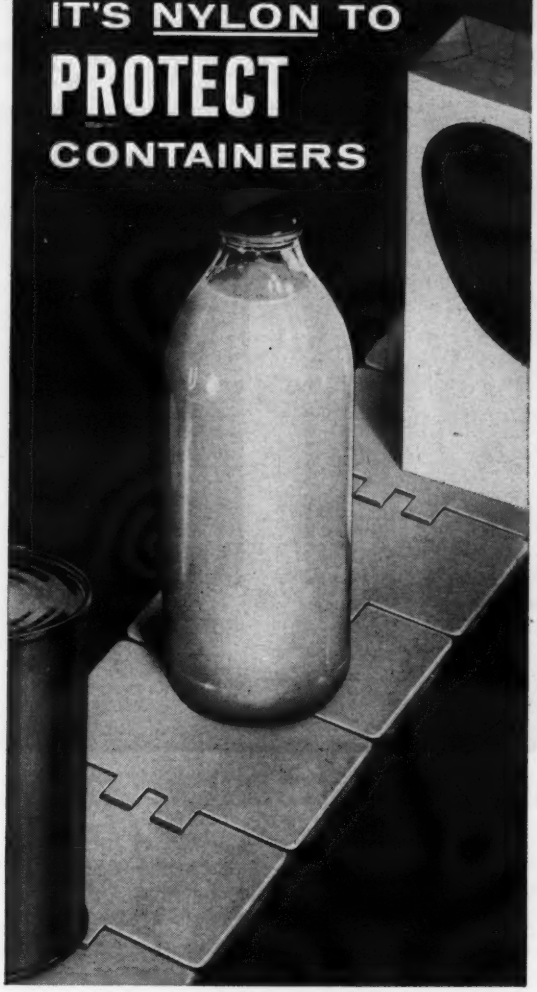
Flip-top maintenance . . . is unique plus feature of new stand-up electric model, furnished in 2000, 2500 and 3000 lb capacities at 24-in load centers.

All electrical contacts and hydraulic controls can be exposed in an easily accessible,

(*Continued on next page*)

Another PLUS value...

IT'S NYLON TO
PROTECT
CONTAINERS



Rex Nylon TableTop Chain is easy on your containers because *it operates without lubrication.* No lubricant stains to soil containers...no "wearing" metal-to-metal contact when handling cans!

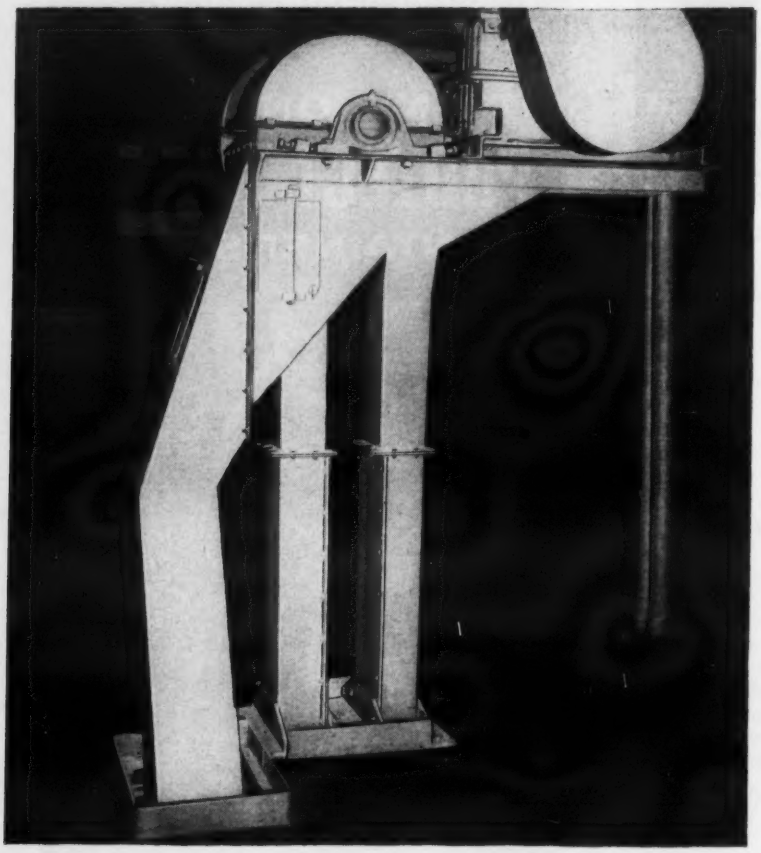
Nylon TableTop is smooth in operation. It's quiet...easy to assemble... stays cleaner and is easy to clean.

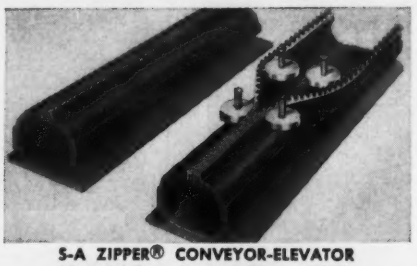
See your Rex Distributor or write Chain Belt Company, 4699 W. Greenfield Ave., Milwaukee 1, Wis.

REX®
NYLON TABLETOP®

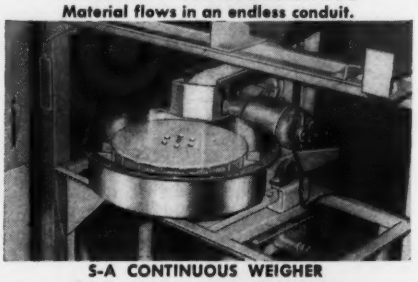
6165 on Reader Service Slip

STEPHENS-ADAMSON

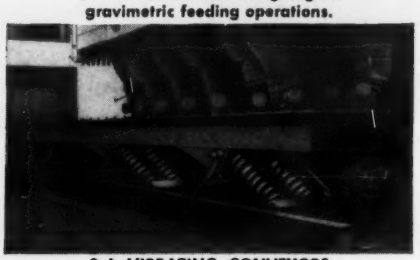




S-A ZIPPER® CONVEYOR-ELEVATOR
Material flows in an endless conduit.



S-A CONTINUOUS WEIGHER
Continuous accurate weighing for gravimetric feeding operations.



S-A VIBRATING CONVEYORS
Natural Frequency Conveyor

SPEEDS EFFICIENCY...LOWERS COST IN FOOD HANDLING

When you invest in bulk handling equipment, the true cost is the price divided by years of satisfactory, efficient service. Unless you are presently one of the thousands of users of STEPHENS-ADAMSON Bulk Handling Systems you haven't discovered the most profitable answer to the above formula. STEPHENS-ADAMSON engineers and builds several types of conveyors for the chemical industry, each providing distinct advantages over the other for certain bulk handling situations. Thus, STEPHENS-ADAMSON recommendations are always based — not on a desire to sell a particular type of conveyor — but the most efficient type of system for the requirements involved. To acquaint you with the versatility of STEPHENS-ADAMSON engineering, we are preparing a special book on Food Handling. Write for your copy.

MORE S-A EQUIPMENT FOR PROFITABLE FOOD HANDLING

- S-A BOX CAR UNLOADER
- S-A SWIVELOADER® Centrifugal Thrower Units.
- S-A TELLEVEL® Automatic Bin Level Controls
- S-A CURVE CROWN® Pulleys
- S-A CARRIERS
- S-A CAR PULLERS
- S-A SHIP TRIMMER
- S-A FOOD SLICE SEPARATOR
- SEALMASTER Bearings

WRITE FOR LITERATURE ON FOOD HANDLING EQUIPMENT

S-A
ENGINEERED BULK HANDLING SYSTEMS
SPEEDWALK® PASSENGER CONVEYORS
SPHERICO® BEARINGS & ROD ENDS

ENGINEERING DIVISION
STEPHENS-ADAMSON MFG. CO.
GENERAL OFFICE & MAIN PLANT, 17 RIDGEWAY AVENUE, AURORA, ILLINOIS

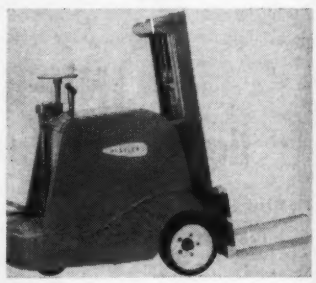
PLANTS LOCATED IN: LOS ANGELES, CALIFORNIA • CLARKSDALE, MISSISSIPPI
BELLEVILLE, ONTARIO

6166 on Reader Service Slip

(*Continued from preceding page*)

vertical position in less than one min by unlocking and swinging steering post to rear, then merely lifting hinged truck top 90°. All controls are contained on underside of this lid.

Simplified maintenance is further assured by fact that truck is produced from packaged components. For example, drive assembly (which can be removed by loosening only six bolts) includes wheels, axle housings, differential gear reduction, motor and brake assembly.



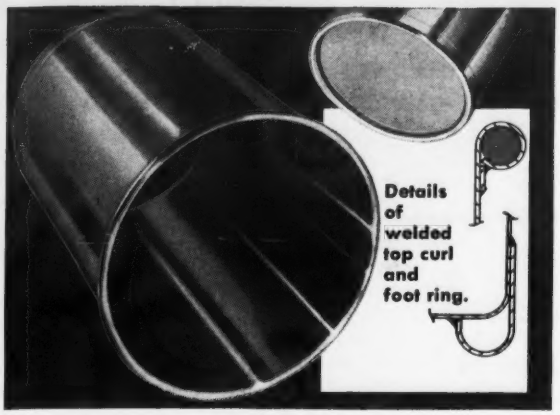
(Hustler "Brute" model stand-up electric fork truck is manufactured by Hustler Corporation, 17743 Elm Rd., Willoughby, Ohio.)

For more information circle 6167 on Reader Service Slip.

How to improve material handling methods

Practical advice on improving a material handling program is offered in 382 page book. Illustrations cover all known types of material handling equipment and containers to be handled.

(*Continued on next page*)



Hackney Stainless Steel Crevice-Free Food Containers

- Meet local, federal maximum sanitary regulations
- Welded foot ring curl and top curl crevices
- Seamless type construction
- Made to resist years of hard service
- 30-, 55-gal. sizes—8 models; 2 types of covers available
- Plain and soldered-crevice models for less critical service

Send for complete details. Write:

Hackney

Pressed Steel Tank Company

Manufacturer of Hackney Products

1459 S. 66th Street, Milwaukee 14, Wisconsin

Branch offices in principal cities

CONTAINERS AND PRESSURE VESSELS FOR GASES, LIQUIDS AND SOLIDS

6168 on Reader Service Slip

ELECTRONICS-TIME

Lumenite

AUTOMATIC CONTROLS

- ELECTRONIC LIQUID LEVEL
- INDUSTRIAL TIMERS
- TIME SWITCHES
- MAGNETIC SWITCHES
- ELECTRONIC SWITCHES

For Complete Information and Prices on Equipment Needed Write For Any Bulletin Listed Below.

LT—Time Switches
PC—Program Clocks
CR—Cycle Repeaters
R—Time Delay Relay
LAS—Auto-Lawn Sprinklers
FL—Liquid Level
FM—Milk Level
FN—Nonconductive Liquid
RMC—Automatic Reset
LEE—Photo-electronic Relays-Counters, etc.
ITC—Ice Thickness
BH—Boiler Level
MV—Motorized Sanitary Valves
IT—Interval Timers

LUMENITE ELECTRONIC CO.

ENGINEERS • DESIGNERS • MANUFACTURERS

407 South Dearborn Street Chicago 5, Illinois

6169 on Reader Service Slip

(*Continued from preceding page*)

Chapters are devoted to handling materials in bulk as well as those packaged in crates, barrels, drums, hampers, and paper and cloth bags.

How to prepare a survey of an individual plant is discussed in the final 25 pages.

("Materials Handling Applications" by D. O. Haynes is available for $12.50 from Chilton Co., Book Div., 56th and Chestnut Sts., Philadelphia 39, Pennsylvania.)

Here's true 'bags to riches' story! Trailer pneumatically

Pipes 15 tons of sugar per hour 3 floors up

New sugar transport trailer which pneumatically discharges its 15-ton payload in less than an hr has proven successful in bulk deliveries to bakeries, food processors and candy makers after more than a year's experience by The National Sugar Refining Company.

Three sugar compartments of 10,000-lb capacity each form payload portion of the tractor-semi-trailer unit. Compartment at rear of trailer houses engine, blowers, pneumatic hose connections

Twin pipelines carry sugar from trailer to rooftop bin, return dust-laden air for filtration

Another PLUS value...

HIGH-SPEED CONTAINER CONVEYING

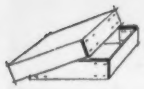
For container conveying at high speeds, you need Rex Nylon PlateTop Roller Chains. Nylon top plates are simply "snapped on" to extended pins of a ¾-inch pitch roller chain. The smooth nylon carrying surface protects the conveyed articles...cans, bottles, jars or small packages. Chain can be run unlubricated in applications where lubricant stains on containers are to be avoided. Snap-on top plates are made in several widths.

See your Rex Distributor or write Chain Belt Company, 4699 W. Greenfield Ave., Milwaukee 1, Wis.

REX®

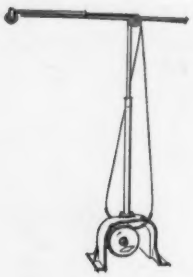
PlateTop Chains

6170 on Reader Service Slip



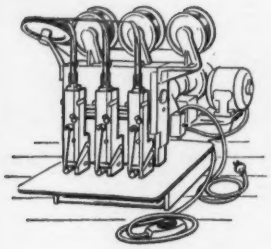
CLOSURE IDEA BULLETIN

For Users of Fibreboard Boxes

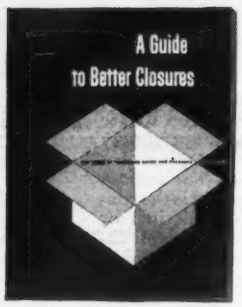


Users needing low-cost, high-volume closure of all types of fibreboard boxes find characteristics of wire stitching method particularly advantageous...economical ...continuous long runs without frequent need to reload...coils hold enough wire for many thousands of stitches.

Wire tangling, snagging, eliminated by positive brake action on Acme Steel 25 and 50 lb. coil holders...machine or floor mounted. Model P1A0 coil holder for single head stitchers holds two 50 lb. coils of wire...wire feeds from first coil while second coil is ready for instant threading ...floor standing model...does not have to be fastened in any manner to floor or stitcher. More details in AD-159.



Toy manufacturer uses Acme Steel Wire Stitcher, Model 600 Champion, to stitch plastic bubble to display card as protection over toy accordion. Stitched cards assemble faster, stay intact better. Operation described completely in W4-2.



Free Booklet, "A Guide to Better Closures" ...an impartial report on glue, tape, staple and wire stitching closure methods. Points the way toward savings, superior product protection...send for your free copy today.

Contact your Acme Idea Man for additional information and ideas on better ways in which wire stitching can serve. His intensive training, backed by Acme Steel Company's 75 years of experience with closure methods, are at your service. Write Dept. FGW-29, Acme Steel Products Division, Acme Steel Company, Chicago 27, Illinois, for information on the complete Acme Steel line of box, book and metal stitchers.

ACME STEEL **WIRE STITCHING**

6171 on Reader Service Slip

(*Continued from preceding page*)
and controls.

Bulk sugar is funnelled from each compartment into a common, underslung transport line connected to the plant pipeline with a six-in flexible rubber hose equipped with detachable couplings.

Cargo then literally "flows" through pipelines into storage bins by means of pneumatic pressure, with airstream acting more or less as a fluid.

No rotary feeders are used, alleviating crystal degradation and inherent maintenance problems.

Dust-laden air from user's bin is recirculated and then cleaned by a filter installed on trailer. This eliminates purchase and installation of dust collector in plant. Recirculation of air assures freedom from accumulation of atmospheric moisture.

Operation eliminates costly handling steps associated with bag-type deliveries.

For example, at the S.F. Whitman candy plant in Philadelphia, fork trucks and skids formerly used to transport sugar bags are gone.

A 75,000-lb storage bin, large enough to hold nearly three full trailerloads of sugar, has been constructed on roof of a three-story wing.

Six-in pipelines run down outside of building to a point about five ft off ground, where they can be connected with sugar trailer's hoses.

Savings in price are nearly 25c per 100 lb over bagged deliveries. When additional savings are considered — elimination of pilferage and bag breakage, more efficient use of storage space and virtual elimination of spillage — some users report over-all savings reaching nearly 50c per 100 lb.

Another advantage of new system is reported to be elimination of personal hazards to workers — fatigue, strains and other injuries stemming from handling heavy loads.

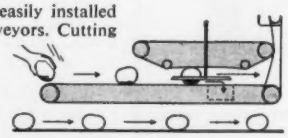
From sanitation standpoint, the closed-circuit system offered by pneumatic trailer and bulk storage bins has special appeal. Trailer's sugar compartments and all discharge

CUT
TOMATO TRIMMING COSTS!

Remarkable
NEW Automatic
Tomato Trimmer

- **Cuts trimming costs more than half!** No hand trimming needed . . . you save up to 75% in labor costs.
- **Boosts production** . . . automatic trimming increases output many tons per hour.
- **Eliminates unnecessary product waste** . . . automatic trimmer pays for itself many times over.
- **Trims out black spots automatically.**

Tomato trimmer is easily installed on any existing conveyors. Cutting parts are made of stainless steel . . . the trimmer is easy to clean . . . easy to maintain.

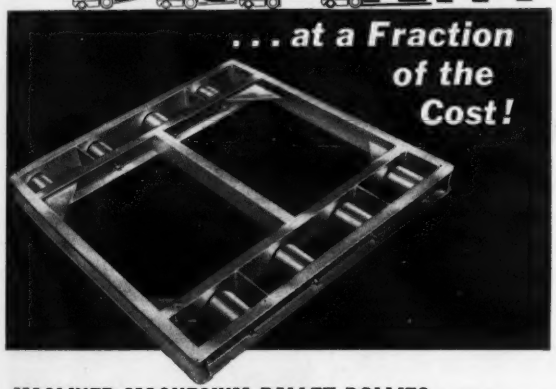


Want more Details? Specifications? Prices? write:

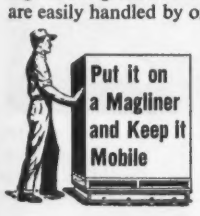
F. H. LANGSENKAMP CO.
227 E. SOUTH ST. • INDIANAPOLIS 25, INDIANA

6172 on Reader Service Slip

Power Truck **M O B ILITY**



MAGLINER MAGNESIUM PALLET DOLLIES free-up your power equipment for the big jobs and longer hauls. Put a Magliner under every pallet load and its ready to roll . . . quickly, easily, *economically*. A small investment that pays big dividends, Magliners are the practical solution to loading bottlenecks . . . high loading costs. Made of magnesium, Magliner pallet dollies are easily handled by one man . . . carry loads up to 4,000 lbs., safely, smoothly on large 3¼" rollers. Tough, rugged, welded magnesium construction. Dependable, long-life service! 14 standard models and sizes.



Write for Bulletin P8-1

Magline Inc. • P.O. Box 542 • Pinconning, Mich.
Canadian Factory—Magline of Canada Ltd., Renfrew, Ont.

6173 on Reader Service Slip

parts are of stainless steel or aluminum.

Adaptations of trailer are being used to haul other granular materials such as malt and grain. Loading and unloading times vary according to material handled and distance covered by pipelines.

(Airveyor Bulk Transport trailer used by The National Sugar Refining Company for bulk deliveries of sugar is manufactured by Fuller Company, subsidiary of General American Transportation Corporation, 176 Bridge St., Catasaqua, Pa.)

For more information circle 6174 on Reader Service Slip.

Cherry canning

(*Continued from page 25*)

with the cannery's 685 can-per-min production speed.

At the Milwaukee can-making plant, 150 miles away, American Can Company installed the necessary equipment to bulk palletize the cans — with each pallet holding between 1864 and 2448 cans, depending on can size.

Each truck can carry 77,000 No. 303 or 57,000 No. 2 cans — the equivalent of two-thirds the amount carried in a freight car.

The trucks move in a continuous flow from Milwaukee to Sturgeon Bay, keeping perfect pace with the cherry crop as it matures and as the cherries are brought each day to the canning plant.

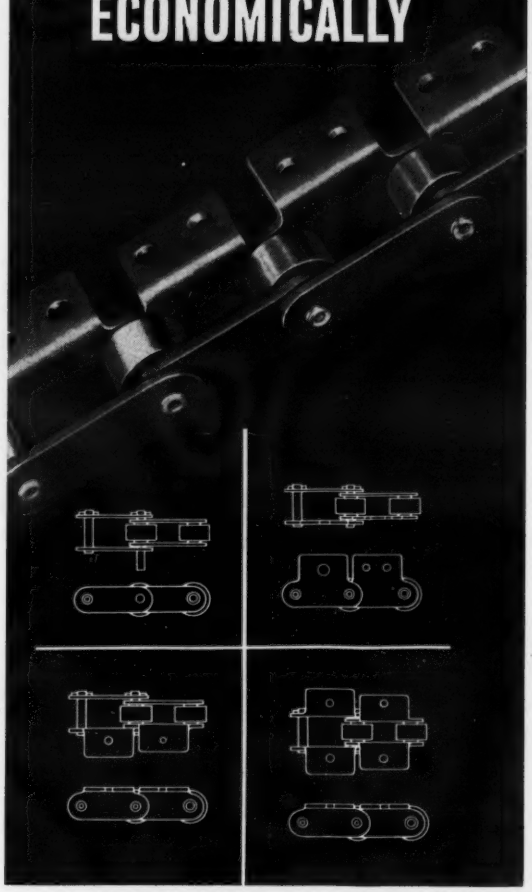
The new exterior elevator also has contributed to the new speed and efficiency. Cans are taken directly from truck-

(*Continued on next page*)

Unique steel bin on truck-van undercarriage holds full palletload of 77,000 No. 303 can ends or 57,000 of No. 2 ends

Another PLUS value...

HOW TO HANDLE IT ECONOMICALLY



Have you checked the advantages of Rex Roller Chains and Attachments for economical, smooth, efficient conveying? In the broad Rex line of standard and made-to-order attachments, there is probably a type that can do your conveying more efficiently. Your Rex Conveying Specialist will be happy to work with you...analyze your problem and recommend the type you need for better performance.
See your Rex Distributor or write Chain Belt Company, 4699 W. Greenfield Ave., Milwaukee 1, Wis.

REX®
ROLLER CHAINS

6175 on Reader Service Slip

(Continued from preceding page)
van via the elevator to the upper warehouse of the cannery.

From here they flow on a gravity slope along roller-rails, where they are positioned by turntables alongside the depalletizing machines.

Results: According to Lawrence Reinhard, FGC general manager, the new equipment will pay for itself within three years through savings in time, efficiency and a lessening in damage to cans.

Before new system, 26 people were involved in unloading, transferring and storing cans that came in bulk in freight cars. Now, five men handle the same job.

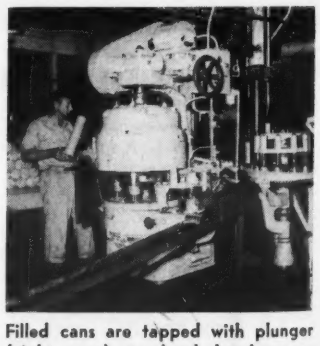
Furthermore, former method of can delivery resulted in average loss by damage in handling of about 200 cans out of approximately 200,000 bulk loaded in freight car.

To obtain a comparison, a 24-hr check was made at the cannery of cans that had arrived on the palletized loads. At one de-palletizer unit — capable of handling 200,000 cans every 24 hr — only 18 rejects were turned up.

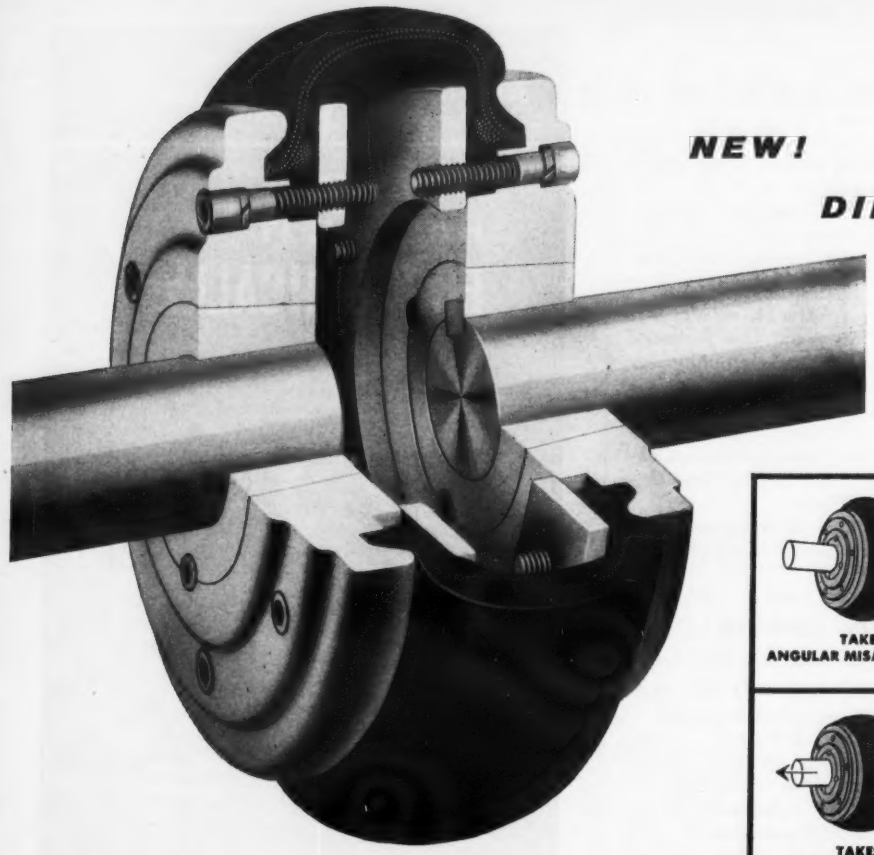
If economical operation continues, company plans to expand in canning of other products. This could lead to a new plant and addition of many more people than now employed.

(Can palletizers, de-palletizers and closing machines are manufactured by American Can Company, 100 Park Avenue, New York 17, N.Y.)

For more information circle 6177 on Reader Service Slip.

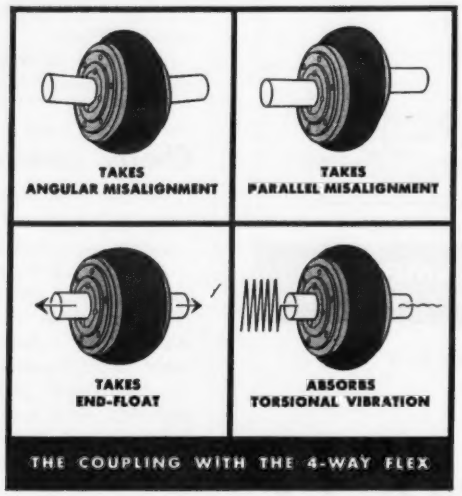


Filled cans are tapped with plunger (right rear) to level head space and squeeze out excess fluid before proceeding to one of five Canco closing machines



NEW!

DIFFERENT!



DODGE

Para•flex

FLEXIBLE CUSHION COUPLING

THIS coupling "swallows up" shaft misplacements. It automatically compensates for end-float, parallel misalignment, angular misalignment *or any combination of all three.* Moreover, it cushions the stresses of shock loads. And it absorbs torsional vibration—reducing noise and protecting machinery from vibration's destructive forces.

Here is a new type of performance—made possible by the development of a tire-like flexing element. Synthetic tension members, bonded together in rubber, give this element the stamina and dependability of modern, high-speed, high-load, shock-absorbing truck tires—and the ability to respond magically to all manner of changing shaft conditions.

Para-flex takes minimum space on the shaft. Mounting is simplified through the use of standard Taper-Lock bushings—no reboring, no machining. Safety is promoted by flush design; there are no protruding parts. No lubrication is required, no periodic inspection. And since the flexible member is molded with a transverse split, it can be replaced *without moving either the driver or driven machine.*

Para-flex Couplings are stocked by Dodge Distributors in popular transmission sizes. They are available from factory stock in capacities up to 825 hp at 1200 rpm. Call your distributor for early delivery to *make your own test.* You'll witness something revolutionary!

DODGE MANUFACTURING CORPORATION, 2400 Union, Mishawaka Ind.

DODGE of Mishawaka, Ind.

CALL THE TRANSMISSIONEER—your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods. Look in the *white* pages of your telephone directory for "Dodge Transmissioneer."

6176 on Reader Service Slip

Moistureproof Corrugated

. . . brings advantages of corrugated's light weight, cushioning, lower cost to shippers of

◀ Eviscerated Poultry

Hydro-cooled Fruit ▼

Above—Wet fowl for shipment to canner is packed directly into "Control Pak" linerless moistureproof container. Note knocked-down boxes in background

Right—M/R board corrugated boxes and peaches leave hydro-cooler after 20-min ice-water spray. Boxes show no ill effects from soaking

NORB LEINEN
Associate Editor

1. Poultry

New kind of linerless moistureproof corrugated container known as "Control Pak" sheds processing water and poultry body fluids — remains sturdy for handling, transit and storage.

Secret of moisture resistance is a patented impregnation of container with inert petroleum resins. All fibers, including both surfaces and corrugating medium, are treated, and the paperboard is held together with waterproof adhesive.

As result, Control Pak's moisture absorption is held to 15 per cent of container weight, whereas regular corrugated has moisture content of about seven per cent, and can become saturated when exposed to water.

Proved in use

During field test evaluation over past 18 months, more than 500,000 Control

(*Continued on page 70*)

2. Fruit and Produce

New corrugated board promises great strength, combined with light weight, to packagers of fresh fruit or produce that is water-cooled or top-ice packed. Exclusive new process impregnates board with wax evenly throughout.

Material, called M/R (moisture-resistant board, offers the extra merchandising advantage of broad, smooth panels for printing — important, as produce normally passes through many steps in the distribution process.

Test findings

Laboratory tests show that under the same humidity conditions, M/R board is considerably stronger than ordinary corrugated.

When subjected to complete submersion (see photo following), new board maintains rigidity and shows strength

(*Continued on page 68*)

High-speed, Conveyor-line
CODE IMPRINTER
for cans, jars, bottles

Fits in minimum space on any line... no line-cutting or dead plates required

Imprints flat, concave, deeply recessed surfaces

Fully automatic MARKOCODER® machine is a versatile packaging line attachment for imprinting *bottoms* of cans, jars, bottles, canisters, paper containers at speeds up to 600 per minute. Keeps products flowing smoothly. Makes consistently clean imprints from rubber type and fast drying fluid ink. Designed for quick code changes, simple maintenance, easy adjustment for different size cans. Install it yourself in a few hours.

Top-coding attachments also available

Write today for Bulletin "TB"

First and foremost in automatic production-line CODING, MARKING and IMPRINTING machines — Gottscho®

GOTTSCHO Dept. V
HILLSIDE 5, N. J.

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NOW IT CAN BE TOLD OVER

100 Million Cans

have been carried by our "Nylite" conveyor chain without appreciable wear. This chain has run at high speeds, without lubrication and with little power. Other chains running alongside have since been discarded. There are still many years of life left in it.

Nylite chains do not scratch cans causing rust.

If you think of your product and your pocketbook . . . think of NYLITE by

FENCO, INC. | 125 No. Racine Ave., Chicago 7, Illinois

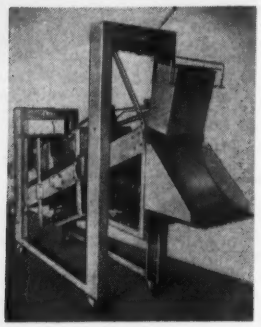
6179 on Reader Service Slip

Turns case over to save cost

Eliminates costly compression unit

Case sealer turns filled cases upside down to let weight of the case itself compress the glued top. This eliminates need for costly, space-consuming compression units.

Cases move up corrugated non-slip belt. Flaps are automatically tucked in and skip-



Rolls on casters wherever needed

glued. Then top flaps are folded down onto glued surfaces.

As case reaches top of incline it is turned upside down onto a slide which delivers it to conveyor or pallet. Handles cases up to 16″ wide, 20″ long and 12″ high. Unit is 3′ wide, 9′ long.

(Mobile case sealer is product of Standard Metal Products Co., 123 N. Racine Ave., Chicago 7, Ill.)

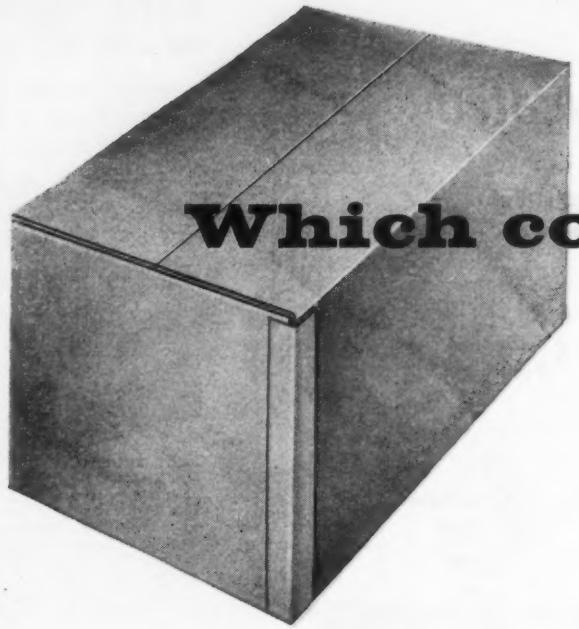
For more information circle 6180 on Reader Service Slip.

Mechanically forms, closes window cartons

Produce formerly was cartoned by hand, or in trays with overwrap

Packaging tomatoes and similar produce in "window" cartons has been an expensive hand operation until recently. Now, new machine automatically forms cartons, then closes them after they have

What you should know about "manufacturer's joints" in Union Boxes



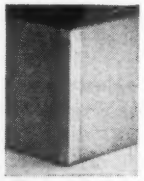
Which corner of a box

One corner is more important than the rest: where your corrugated shipping container is held together. This "hinge", or manufacturer's joint, often holds the key to your box's performance.

As the illustrations show, manufacturer's joints comprise three basic types: taped, stitched, and glued-lap. Each does a special job. Knowing which to use, and when, calls for a detailed analysis of your product and how it will be shipped.

Union Box engineers will be glad to make such a study for you. This is part of Union's complete structural design service. These fundamentals, however, are excellent guides:

Many shippers prefer tape



Taped Joint (outside)

Tape is generally gum-backed, reinforced kraft paper or cloth, having high tear strength, especially in the lengthwise direction. Tapes are 2, 2½ and 3 inches wide and come in varying grades depending on degree of strength required.

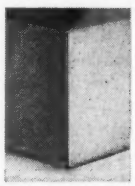
should you examine first?

Advantages: no projections. In stacking, boxes lie flat, rock less. Also, entire interior area of box can be used. The taped joint is continuous, too . . . seals out dust and dirt. And it folds to make a true box corner.

On the other hand, tape is frequently more expensive than other manufacturer's joints. It can be adversely affected by moisture also. In some cases, tape may interfere with printing.

The sturdy stitch

Frequently used for heavy items like canned goods, this joint uses steel staples driven from the outside of the box panel. It is probably the strongest "hinge", gives the most positive closure, and is not affected by moisture or cold. It is usually the least expensive.



Stitched Joint (outside)

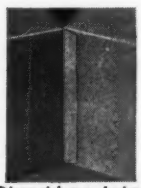
The closure, however, is not continuous. And, since the metal stitches may protrude inside the box, this joint is normally not recommended for fragile and prone-to-scratch articles.

The diagonal stitched joint shown is a typical arrangement. Others include vertical, horizontal, and double stitching.

Glued lap . . . the versatile joint

Flap may be adhered either to the inside or outside of the box, and to the end or side panel. Inside-flap gluing is the most popular. It is the only joint which leaves a completely uninterrupted exterior printing surface.

Like the taped joint, the glued lap joint is continuous . . . forms a true fold. Performance under adverse moisture conditions is questionable. Also, inside-lap does not give 100% clear inside-packing area.



Glued Lap Joint (inside)

Take full advantage of Union's accumulated knowledge in constructing and recommending manufacturer's joints for shippers in every industry. Consistently well-engineered features such as these offer the surest protection for your product and your shipping investment.

union camp

Write for Union's free, informative booklet "Manufacturing Corrugated Boxes."

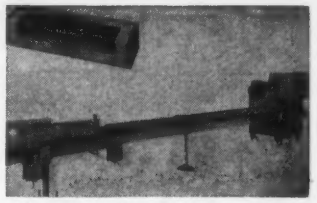
UNION BOXES

UNION BAG-CAMP PAPER Corporation
233 BROADWAY, NEW YORK 7, N. Y.

Factories: *Savannah, Ga.; Trenton, N.J.; Chicago, Ill.; Lakeland, Fla.*

Sales Offices: *Eastern Division—1400 E. State Street, Trenton, N.J.*
Southern Division—P.O. Box 570, Savannah, Ga.; P.O. Box 454, Lakeland, Fla.
Western Division—4545 W. Palmer, Chicago, Ill.

6181 on Reader Service Slip



Automatically forms, conveys, closes window cartons

been filled.

Cost of window-cartoning now compares favorably with tray and overwrap method, and is greatly reduced over manual packing.

Machine is easy to operate and maintain — cripples and damaged products are virtually eliminated.

Cartons are sturdy and stack easily when filled. More printed surface is provided for sales message. Occasional bad tomatoes can be replaced without destroying carton.

If desired, packer can start with forming machine only, add closing unit later as volume justifies.

(Kliklok automatic window-cartoning line is product of Kliklok Corp., 730 Broadway, Redwood City, Calif.)

For more information circle 6182 on Reader Service Slip.

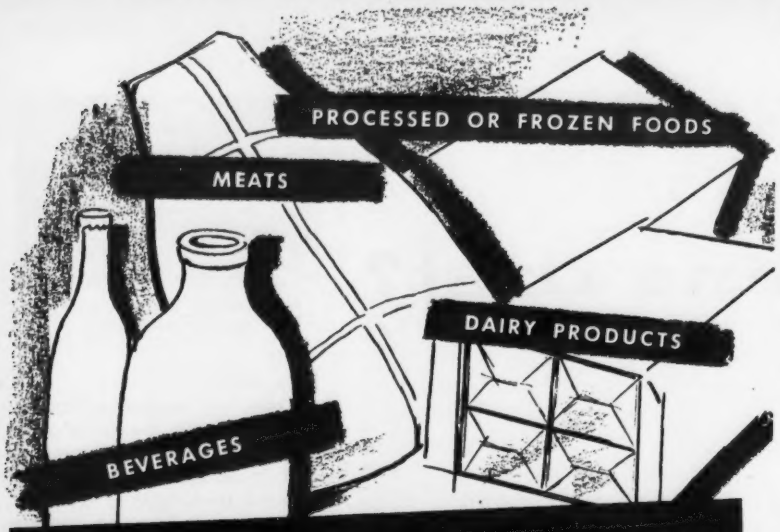
Advantages of versatile can fillers highlighted

Two bulletins list comprehensive specifications and filler selection information on wide line of high speed fillers for liquids and semi-solids.

Extensive tables are given, including how to select proper valve for given capacities in cans per min. Accuracy of valve action is diagrammed, and accuracy under production conditions is graphed.

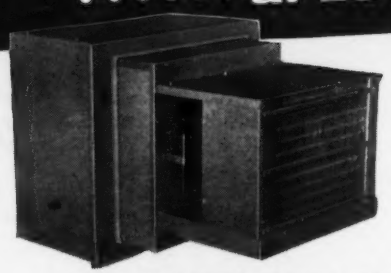
("Fillers by FMC," Bul No. CMD 801-E, 8-pp, and "M & S Fillers by FMC," Bul. No. CMD-501E, 16-pp, are issued by Food Machinery & Chemical Corp., Canning Machinery Div., (Western: P.O. Box 1120, San Jose 8, Calif.; Eastern: 103 E. Maple St., Hoopeston, Illinois.)

For your copy simply circle 6183 on Reader Service Slip.



CONTROLLED PROTECTION

..... at Lower Cost



Model 100M—1 h. p. Air Cooled Unit for 12' x 12' x 7½' Cooler. Completely automatic, requires 20¼" x 20¼" wall opening—only.

TAYLOR-BURCH *PACKAGED* COOLER UNITS...

The latest, most modern development in economical, maintenance-free, space-saving refrigeration units. Operation and defrosting is completely automatic—completely dependable under all conditions. All Taylor-Burch models are of the self-contained or "packaged" type—easily installed without special technical knowledge or tools. And—better yet, they are available in a wide range of models and styles to suit each and every need, more economically.

Whatever your plan—cooling, freezing, ice-holding, etc., look *first* to Taylor-Burch for the best in refrigeration equipment.

LITERATURE AND SPECIFICATIONS AVAILABLE ON REQUEST

Gentlemen: Please send complete information on your packaged cooling units.

Name_____

Company_____

Address_____

City_____ Zone_____ State_____

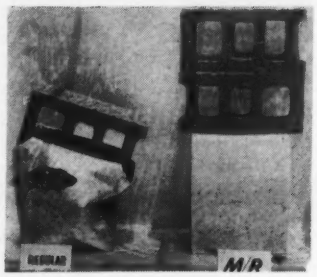
☐ Please have your local representative contact me.

TAYLOR-BURCH

Refrigeration Products JACKSON, MICHIGAN

6184 on Reader Service Slip

M/R board



After nine minutes' complete submersion, regular corrugated box fails completely under single cement block; M/R board box remains intact under two blocks

(*Continued from page 65*)

characteristics unapproached by regular corrugated.

In field test, hydro-cooled peaches from the huge Gaffney, South Carolina, orchards of Louis Caggiano's Sunny Slope Farms were shipped hundreds of miles by truck to market without a single failure.

At the peach-packing plant, M/R boxes were packed with fruit, then subjected to a 20-min drenching in the ice cold water of a hydro-cooler.

After emerging from the hydro-cooler without showing any weakening of the corrugated structure, the boxes were capped and loaded into a mechanically refrigerated truck for shipment.

Upon arrival at Philadelphia's Dock Street three days later, the boxes were as straight and strong as at beginning of trip.

Simple and adaptable

In appearance, M/R board and boxes made from it vary from regular corrugated boxes only in their color, which is slightly darker.

The special box designs now in use, developed especially for the fruit and produce markets, feature quick and easy setup, handholds to facilitate handling and additional die-cut holes around bottom of box to speed flow of water through the fruit or produce.

Additional box styles to meet specific requirements of fruit or produce can be designed much as regular corrugated boxes are designed to answer packaging problems of

Sauces
Cheeses
Gravies
Soups
Meat, Fish, Poultry

Now you can give them all a

Natural Hickory Smoked Flavor...

without expensive processing costs

It's easy to cash in on the increasing popularity of foods with a hickory smoked flavor. Just add these new naturally smoked seasonings to the foods you sell. Use Kater Autolysate, a naturally smoked autolyzed brewers' yeast extract, for cheeses, gravies, sauces and other foods requiring a liquid ingredient. Use naturally smoked Kater Bouillon for dry soup mixes, seasoning salts, crackers, chips and other foods requiring a dry ingredient. Both the extract and the dry bouillon are water-soluble, retain their flavor during processing, and blend completely and uniformly with other ingredients. These products are also available without hickory smoked flavor for use as a meat extract substitute and extender at a saving of more than 75% over meat extract.

WRITE FOR FREE SAMPLE . . . sent only to bona fide research or purchasing personnel. Write on company letterhead stating title and we will send sample postpaid.

VICO
PRODUCTS
COMPANY

Manufacturing chemists for the food and pharmaceutical industries

415 W. Scott, Chicago 10, Illinois

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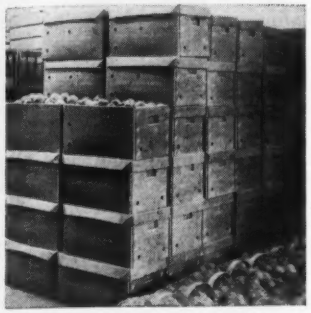
almost every industry. Most of these boxes will consist of no more than two pieces.

Simplicity of the box de-



In warehouse, M/R corrugated boxes, not peaches, support weight of stack. Stacking strength of box saves warehouse space

sign and the minimum number of pieces involved should substantially reduce number of persons needed to set up, pack and prepare produce for shipment.

Tests by the Medical College of South Carolina have established that boxes of the new board are completely safe for shipment of fruit and produce.

(M/R (moisture-resistant) corrugated board for fruit or produce is development of Hinde & Dauch, Division of West Virginia Pulp and Paper Company, Sandusky, Ohio.)

For more information circle 6186 on Reader Service Slip.

Corrugated container has non-slip surface

A corrugated shipping container with built-in anti-skid properties is designed to prevent cases of goods from slipping off pallets, trucks or conveyors during modern handling activities.

Appearance of the container is not changed by the non-slip surface. Case resists scuffing, and is printable.

("Skid-Master" containers are development of the Packaging Division, Olin Mathieson Chemical Corp., 460 Park Ave., New York 22, N. Y.)

For more information circle 6187 on Reader Service Slip.

Now you can save the cost of 3 or 4 hand packers

—when you install one FMC PRESS-PACK FILLER!

Here's the filling machine that takes the "high" out of "overhead." It replaces three or four pairs of hands, with obvious and important savings: it quickly pays for itself. And it goes on making money long after that.

In a nutshell, the FMC Press-Pack Filler employs adjustable telescopic measuring pockets, and a mechanical plunger that automatically presses the product into the can to an accurate, uniform, pre-determined fill weight. All this and a lot more we'd like to tell you about. Just write for full information, or call your FMC representative.

Fills whole and French style beans in No. 10 cans at 20 to 30 cpm; cut beans at 25 to 35 cpm. With some modification, ideal for sliced apples, sauerkraut, cut asparagus and other products requiring press-packing.

fmc FOOD MACHINERY AND CHEMICAL CORPORATION

Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION
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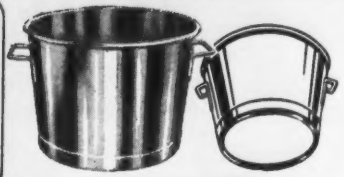
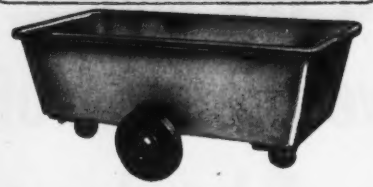
6188 on Reader Service Slip

STANcase
STAINLESS STEEL
EQUIPMENT

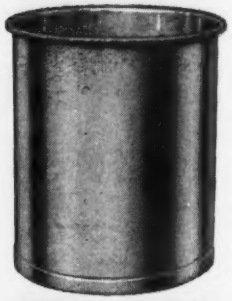




ALL-SEAMLESS
STAINLESS STEEL TUBS
Model No. 98 — 56 qts. or 100 lbs.
Model No. 97 — 34 qts. or 60 lbs.
(Covers Available)
ALL SEAMLESS, STAINLESS STEEL TUBS drawn of one sheet of 18 ga. Stainless Steel. Ruggedly constructed for long-life service, yet light in weight (14½ lbs. and 12 lbs.) Maintained sparklingly clean and sanitary with minimum labor.

STAINLESS STEEL
FOOD HANDLING TRUCKS
MODEL No. 36 — of 14 ga. Stainless Steel. Inside dimensions: 58" x 25½" x 17" deep. Three other popular sizes available. Write for catalog.

SANITARY, STAINLESS STEEL DRUMS
Ruggedly constructed for long-life service of 16 ga. Stainless Steel. Inside surfaces are seamless and polished; maintained sparklingly clean and sanitary with minimum labor. Foot rings are made of heavy gauge Stainless Steel; take abuse of service (bottom of drums do not rest on floor).



AVAILABLE IN 3 SIZES
MODEL No. 30 — 30 Gal. Cap.
MODEL No. 55 — 55 Gal. Cap.
MODEL No. 60 — 60 Gal. Cap.
(Covers available for Models No. 30 and No. 55)

FULLY APPROVED BY HEALTH AUTHORITIES
Manufactured by
THE STANDARD CASING CO., Inc. 121 Spring St., New York 12, N. Y.

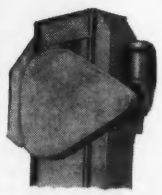
WRITE FOR CATALOG OF COMPLETE LINE OF SANITARY, STAINLESS STEEL EQUIPMENT

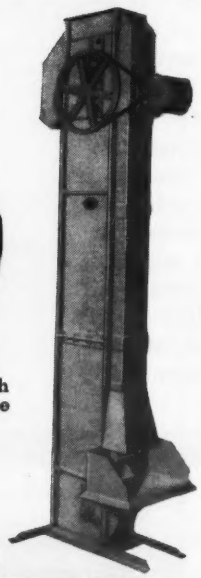
6189 on Reader Service Slip

MEYER MACHINE COMPANY

P. O. Box 5096 - PErshing 4-5151
3528 Fredericksburg Road
SAN ANTONIO 1, TEXAS

Meyer Bucket Elevators handle bulk materials without breakage, damage, locking or jamming. The design of the intake prevents materials from dropping into elevator boot, thus eliminating production loss for clean-out. Positive discharge prevents intermixing of materials when more than one product is run in the same elevator. Manufactured of heavy guage steel throughout, these elevators give long, trouble-free service. Available in any height or capacity.





Also available with Geared Motor Drive

- SAFE
- GENTLE
- EFFICIENT

Chain tensioning units automatically compensate for normal wear or stretch of heavy duty chain. Buckets are of aluminum or stainless steel. Sealed, self-aligning ball-bearings throughout.

Write for Bulletin 812

MEYER BUCKET ELEVATORS

6190 on Reader Service Slip

Control-Pak

(*Continued from page 65*)

Pak containers have been shipped successfully by poultry processors in Middle Atlantic area.

One such processor, Dover Poultry Company, Baltimore, Md., has adopted the new container 100 per cent for shipments to food processor customers.

Firm partner Millard S. Sindler notes the following advantages from use of the new type container:

Product quality: New pack holds quality better from time bird enters Dover's cooler until it goes into processor's cooking pot. Tightness of box and its insulating qualities guard against damaging temperature fluctuations.

Product purity: Pack protects against major source of bacterial contamination, as body fluids drain freely from each case through small slots at all eight corners, yet do not drip into boxes below because boxes are enclosed.

Closed container also keeps out dirt and foreign matter. The corrugated box doesn't get brittle and break or splinter in handling — freezing actually makes it tougher.

Eliminates ice: Dover has found that fresh fowl can be shipped safely 100 miles in hot weather with no ice in container and only small amount of dry ice in an insulated truck. On arrival, flesh temperatures were at "pack out" level.

With frozen fowl, no en route cooling is needed.

The processor customer benefits in that he doesn't have to separate the ice and worry about how melted ice might affect his formulation. Further, when he empties container, he needn't watch for torn lining paper or splinters.

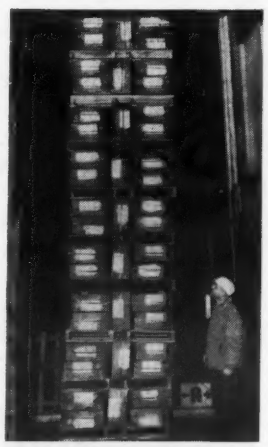
Storage protection: In freezer storage, enclosed container gives better protection against oxidation and evaporation losses. Cushioning of corrugated prevents breakage of poultry bones when frozen case is jarred or dropped.

Production speed-up: Dover formerly had one man setting up cases, weighing each for the tare (which varied) and lining cases with paper.

Now, corrugated box is set up on packing line. Poultry is put right into the unlined box, with no straightening out of a lining paper.

Net weight is quickly figured, because each box weighs the same. Closing with steel strapping takes 15 sec or less.

Faster handling: Smooth surfaces of box let it slide easily along conveyor. Truck loading at Dover now takes about one-half the time it used to take. Also, possible injury from splinters has been eliminated.



Stacking strength of Control Pak permits ceiling-high storage of fowl in freezer. Bottom pallet load here supports 2½ tons.

Other applications

Control Pak for canners is high and narrow, holds about 65 lb of fowl on average. Joint is glued with waterproof adhesive to avoid use of staples. Both material and design have been accepted by USDA for poultry.

In other variations, pack is being used successfully for shipping broilers and sea foods. Future wide use is anticipated for hydro-cooled vegetables and various foods which are wet when packed, or are packed in ice.

(Control Pak moistureproof corrugated container for fresh and frozen eviscerated poultry is development of Stone Container Corporation, 4200 W. 42nd Place, Chicago 32, Ill.)

For more information circle 6191 on Reader Service Slip.

Nest-pack plastic trays

Provide protection of plastic at price of paperboard

Uses: First application has been for commercial packaging of fruit, but candy industry and baking industry are considering using new packaging material.

Features: Since the trays provide pockets in which each fruit can nest separately, bruising is practically eliminated.

In recent test, USDA found that of fruit shipped in Panta-Pak trays, less than one-half of one per cent bruised — a percentage that falls within the Department's top rating.

Special tray patterns handle peaches, nectarines, plums, persimmons, fresh figs, many other fruits

Description: Made of five-gage calendered film, the trays come in 30 different patterns to fit various fruits, and in two sizes — 16⅛ by 13¼" and 16⅛ by 11½". Trays are vacuum-formed in a continuous process, enabling them to compete pricewise with paperboard.

(Panta-Pak plastic trays are development of Compagnia Italiana Nest-Pack S.P.A., Bologna, Italy, which has granted sole US manufacturing, distributing and sales license to The Pantasote Company, 415 Madison Ave., New York 17, New York.)

For more information circle 6192 on Reader Service Slip.

Aluminum Foil Packaging–Light Barrier and Vitamin Protector

Report No. 19 of a Series by Reynolds Metals Company

An early report, No. 6 of this series, presented the advantages of aluminum foil as a light barrier particularly in regard to prevention of oxidative rancidity in products containing oil or fat. Numerous experiments were cited showing the catalytic effect of light as a major contributor to this common form of food deterioration. Report No. 14 dealt with the effects of light on vitamins in enriched, partially baked rolls.

Milk—a Dramatic Example

Of the great number of food products affected adversely by light, however, milk is perhaps the most dramatic example.* Light acts upon milk principally in the following ways: (1) by catalyzing the oxidation of ascorbic acid, (2) by causing the destruction of Riboflavin and Vitamin A, and (3) by stimulating the development of oxidized and activated flavors.

A series of tests conducted for Reynolds Metals Company by the Wisconsin Alumni Research Foundation compared various types of milk in four types of containers: clear glass, brown glass, waxed carton and aluminum foil carton. The milk thus packaged was exposed to both fluorescent light and sunlight. The fluorescent lighting was designed to simulate conditions in a supermarket —the product being placed in an open top refrigerated display case maintained at 50° F., with the lights developing an intensity of about 100 foot candles. Tests under fluorescent light were made prior to exposure, then after 3 and 10 days. Those using sunlight were made prior to exposure, then after 30 and 120 minutes.

Summary of Test Results

Summarizing the separate tests measuring vitamin content before and after the indicated light exposures, the results were as follows. For Riboflavin (Vitamin B_2), no losses of nutritional significance under fluorescent light, but substantial losses in sunlight for milk stored in clear glass and waxed cartons — aluminum foil and brown glass affording excellent protection. For reduced Ascorbic Acid (Vitamin C), much slower rate of loss for milk stored in aluminum foil and brown glass —the pattern appearing similar in fluorescent and sunlight. For Vitamin A, only the milk in clear glass containers showed losses under fluorescent light; in sunlight these losses were very rapid and there was also some loss in waxed cartons.

Tests for Flavor Scores

Tests for flavor scores produced findings of special interest, since there appears to be a correlation between the formation of oxidized and hay-like flavors in milk and the loss of Ascorbic Acid. In the Table shown here, all scores of 35 or under represent a flavor defect — a definite oxidized flavor in whole milk and a pronounced hay-like flavor in skim milk. Here even brown glass failed to retard materially the flavor change. Only the aluminum foil carton proved effective under fluorescent light. And the results in direct sunlight were almost identical.

Manufacturers concerned with vitamin retention, or with other effects of light, such as oxidative rancidity, are invited to call the nearest Reynolds sales office. Or write to **Reynolds Metals Company**, Richmond 18, Virginia.

*Remainder of this report summarizes findings by the Wisconsin Alumni Research Foundation, as set forth in an article entitled "The Effects of Light on Homogenized Whole Milk and Some Fortified Milk Products", by J. J. Birdsall, L. J. Teply, P. H. Derse, in *Food Technology*, Dec., 1958, Vol. 12, No. 12, Page 670.

FLAVOR SCORES OF FOUR TYPES OF MILK STORED UNDER FLUORESCENT LIGHTS AT 50° F.

Package	Homogenized Whole Milk			Vitamin and Mineral Fortified Whole Milk			Vitamins A and D Fortified Skim Milk			Multivitamin Fortified Skim Milk		
	0 days	3 days	10 days	0 days	3 days	10 days	0 days	3 days	10 days	0 days	3 days	10 days
Clear Glass	39	33	33	38.5	33	33	38.5	33	33	38.5	37	33
Brown Glass	39	34.5	34	38.5	37	34	38.5	34	33	38.5	37.5	33
Waxed Paper Carton	39	35	34	38.5	33	33	38.5	36	33	38.5	37	33
Foil Laminated Carton	39	38	38	38.5	38	38	38.5	38	37	38.5	37	37.5

Watch Reynolds new TV shows "Walt Disney Presents" and "All Star Golf" every week on ABC-TV.

© 1959 by Reynolds Metals Company

6193 on Reader Service Slip

NOTHING STICKS TO Teflon*

FOR FOOD PROCESSING . . . AN ECONOMICAL *time saver*

Prevents delays. As a lining for hoppers, mixers, chutes, Cementable Teflon, with its low coefficient of friction, moves dry powders and sticky batches swiftly, freely. Eliminates material build-up and the need for vibrators.

Eliminates conveyor jamming. Teflon's slippery surface on conveyor guide rails slides packages on their way without jam-up. Preserves shelf appeal of boxes, labels, bags.

Reduces clean-up time. Just wipe off Teflon work surfaces and they are ready for re-use. No lost time in soaking or scraping hardened, gummy food particles.

Cementable Teflon, as made by Garlock's Plastics Division, the United States Gasket Co., is non-contaminating, odorless, colorless, tasteless, non-absorbent. It can be bonded to metal, wood, glass, concrete, other surfaces. Available in continuous tapes .005″ through .096″, through 24″ wide, and in sheet through 48″ x 48″.

See how you can put this time-saver to work. Contact one of the Garlock Packing Company's 30 sales offices and warehouses in the U. S. and Canada, or write for Catalog AD158.

United States Gasket

THE GARLOCK PACKING COMPANY, Palmyra, N. Y.

*DuPont Trademark for T.F.E.-fluorocarbon resin

Plastics Division of GARLOCK

6194 on Reader Service Slip

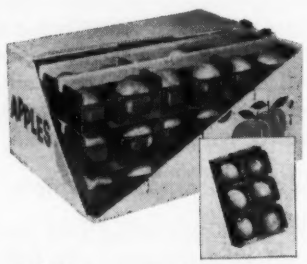
packaging

Cell-style produce cartons give protection, display

Uses: Rapid set-up carton is designed for produce from 2¼ to 3½″ in diam. Current applications are for shipping apples, peaches, pears, tomatoes, oranges.

Features: (Cartons) Inexpensive units set up rapidly, protect fruit en route from bruising, are ready for immediate mass stacking and display using minimum counter space. Store is spared cost of repacking. Cartons show off product, permit easy carrying.

(Outer shipping containers) Corrugated container features corrugated supporting struts that lock in each individual carton, preventing shifting in transit. Struts also carry load, giving outer container strength to support 15-high stack of loaded containers.



Individual 6- (inset) or 8-cell units are locked into outer container by corrugated supporting struts (arrows)

Description: Both the cartons and the outer shipping containers are paraffin-coated inside and out.

Cartons, in red, green or black, come as 6- or 8-cell units. Latter can be divided into two 4-cell units.

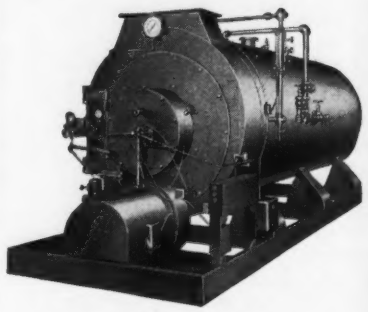
Five sizes of shipping containers include 36- and 54-count containers for 6-cell cartons, and 48-, 72- and 96-count containers for 8-cell cartons.

("Flip-Open and Fill" produce package and specially supported outer shipping container are developments of Cornell Paperboard Products Company, 1514 E. Thomas Ave., Milwaukee 1, Wis.)

For more information circle 6195 on Reader Service Slip.

COUNT 'EM!

CYCLOTHERM CUTS STEAM PROCESSING COSTS 3 WAYS!



1. FUEL COSTS Cyclotherm Cyclonic Combustion means just what it says — controlled fuel and air, whirling at 200 mph, forming a cyclone in the furnace! This high velocity burning assures maximum efficiency in combustion and heat transfer, resulting in lower fuel consumption.

2. MANPOWER COSTS A fire without a fireman! Electronic controls operate the Cyclotherm safely and automatically. Smaller models cycle on and off as steam is required. On larger models, precision modulation coordinates the fuel-air ratio to the load demand, from 30% to 100% of rated capacity.

3. INSTALLATION AND MAINTENANCE COSTS Cyclotherm is factory assembled and factory pre-tested. All you do is make five simple connections. 50% maintenance savings are not uncommon. Return tubes cleaned in minutes with no removal or replacement of refractories. No standby unit needed.

And remember—one-third smaller than ordinary generators of similar capacity, a Cyclotherm fits almost anywhere. Many plants have installed two Cyclotherms for utmost flexibility and power. Burns gas or oil with quick changeover. 15 to 750 hp, 15 to 200 PSI

Cyclotherm Division,
National-U. S. Radiator Corp.
60 E. First St., Oswego, N. Y.

Please send me a free copy of your booklet giving full information on Cyclotherm Steam and Hot Water Generators.

Name.....

Company.....

Address.....

City..... Zone..... State.....

6196 on Reader Service Slip

Method substitutes ceiling-suspended inflatable rubber "walls" for wooden bulkheads or steel doors — is expected to curb rail shipping losses 50-75 per cent, as load cannot loosen when containers compress through humping

Heinz, with food industry's lowest loss-and-damage record, aims for perfect rail deliveries with

Air-cushioned Compartments Built into Freight Car

Dramatic new "air-locked" method of freight loading is being tested by H. J. Heinz Company in shipments from Pittsburgh headquarters to West and East Coasts.

Heinz already boasts record-low figures of freight damage — a factor credited to adoption several years ago of Pullman-Standard's compartmented car shipping.

New system consists of rubber-lined, mattress-like sacks which hang on trolleys fastened to roof of car interior.

In loading a car, all but one of these sacks (deflated) are pushed to one end of the car. The remaining bag is left flat against the other end.

Cargo then is loaded into that portion of the car, and another uninflated bag is moved into position.

Once car is loaded, low-pressure air is introduced into an overhead line from a tank of compressed air mounted under the car. This expands the bags and "locks" the cargo into place.

Constant air pressure is maintained, with compensation

(*Continued on page 76*)

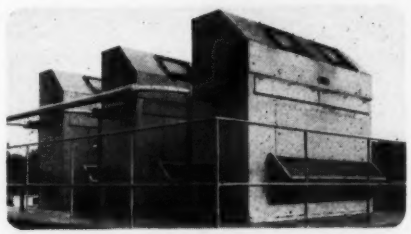
MODERNIZING?

Check

TRADE FRICK MARK® **Refrigeration**

FOR ALL YOUR NEEDS

- ☑ CONDENSERS
- ☑ PIPE COILS
- ☑ SHELL-ICE MAKERS
- ☑ VALVES & FITTINGS
- ☑ ICE RESERVE UNITS
- ☑ AIR HANDLING UNITS
- ☑ SHELL & TUBE COOLERS
- ☑ "ECLIPSE" COMPRESSORS
- ☑ HEAVY-DUTY COMPRESSORS
- ☑ QUICK-FREEZING SYSTEMS
- ☑ "INSTANT" WATER COOLERS
- ☑ MULTI-STAGE COMPRESSOR SYSTEMS
- ☑ LOW PRESSURE REFRIGERATION UNITS
- ☑ AUTOMATIC CONTROLS & DEFROSTING SYSTEMS
- ☑ ☑ COMPLETELY ENGINEERED SYSTEMS, DELIVERED AND INSTALLED



Frick Evaporative Condensers Save Up To 95% Of The Water Used.

Frick Heavy-Duty Four Cylinder Compressors Can Be Adapted to Handle Any Type of Refrigerant.

Frick Shell-Ice—Clear Solid Pieces of Curved Ice. Made Automatically, Without Snow or Waste.

It is a proven fact that today's semi- and full-automatic equipment soon saves enough to pay for itself.

Whatever the refrigeration requirements of your plant—quick freezing, ice making, cold storage, humidity control, low temperatures, condensing, air conditioning, or any process cooling . . . Frick engineers will help you modernize your present system or design one to meet your needs.

Frick refrigeration equipment is world renowned for a long trouble-free life of dependable operation. Many Frick compressors have been in operation for over 40 years.

CALL your nearest Frick Branch of Distributor today. Or write direct to . . . . .

DEPENDABLE REFRIGERATION SINCE 1882

FRICK CO.

WAYNESBORO, PENNA., U. S. A.

6197 on Reader Service Slip

"FORD HEAVIES SAVE US 14% ON GAS ALONE!"

says Francis F. Gitchell
Francis F. Gitchell Company
Binghamton, New York

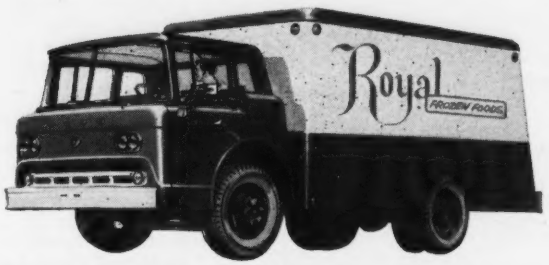
"For example, our Ford F-700 averages over 9 miles per gallon of gas. That's a saving of 14% over other trucks we run . . . with the same loads and over the same routes. And our savings don't stop here. Fords use less oil. We seldom, if ever, have to add oil between changes.

"Ford trucks cost less for maintenance, too! We just dropped a new short block in a Ford after 140,000 miles. In only 4½ hours three men had it changed and the truck on the road earning for us.

"My drivers say, 'Ford Heavies handle like a car compared with other trucks,' and they sure like the comfort and convenience of Ford's *Custom* Cab.

"Because of the good experience we've had with our 5 Fords, we're ordering a '59 F-850 with the new Super Duty V-8."

GO FORD-WARD for savings with '59 Ford Trucks!



Whatever your job . . . wherever you do it—you'll find Ford Heavies and Extra Heavies are engineered and built to do it better! Whether your job calls for conventional models, like the Gitchell Co. tractors, or a C-550 Tilt Cab truck as shown here . . . you'll be *ahead* with a Ford. And the '59 improvements in these models will bring still more benefits to your operation.

Greater operating economy with new, faster rear axle ratios and wider choice of transmissions.

More efficient parking brake of the internal expanding type has approximately 50% greater stopping and holding ability, requires less than half the operating effort needed for the previously used type.

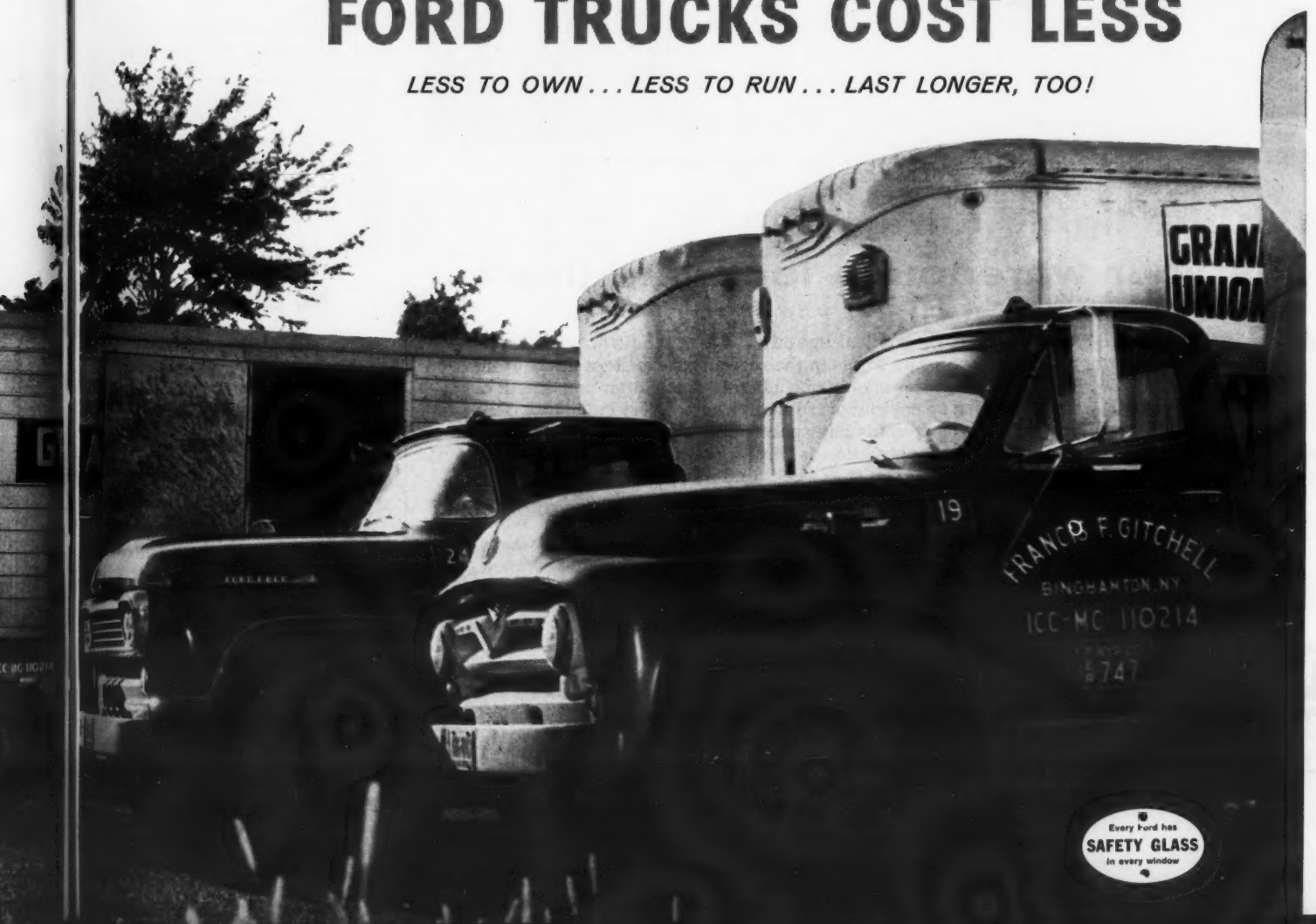
Increased payloads and longer axle life with new, higher-capacity front and rear axle options.

Factory installed tractor package custom-fitted to Ford trucks for safer, more dependable braking.

Yes, the new '59 Ford trucks are here to take you *Ford*-ward for savings, *Ford*-ward for modern style and stamina. See your Ford Dealer today!

FORD TRUCKS COST LESS

LESS TO OWN . . . LESS TO RUN . . . LAST LONGER, TOO!



For more information on product at left, circle 6198 see information request blank opposite last page.

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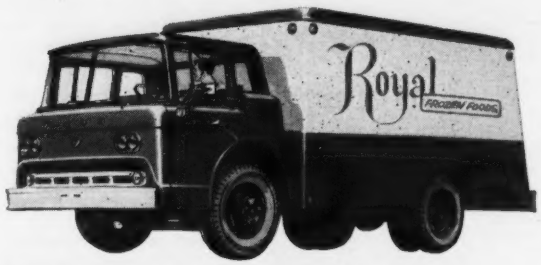

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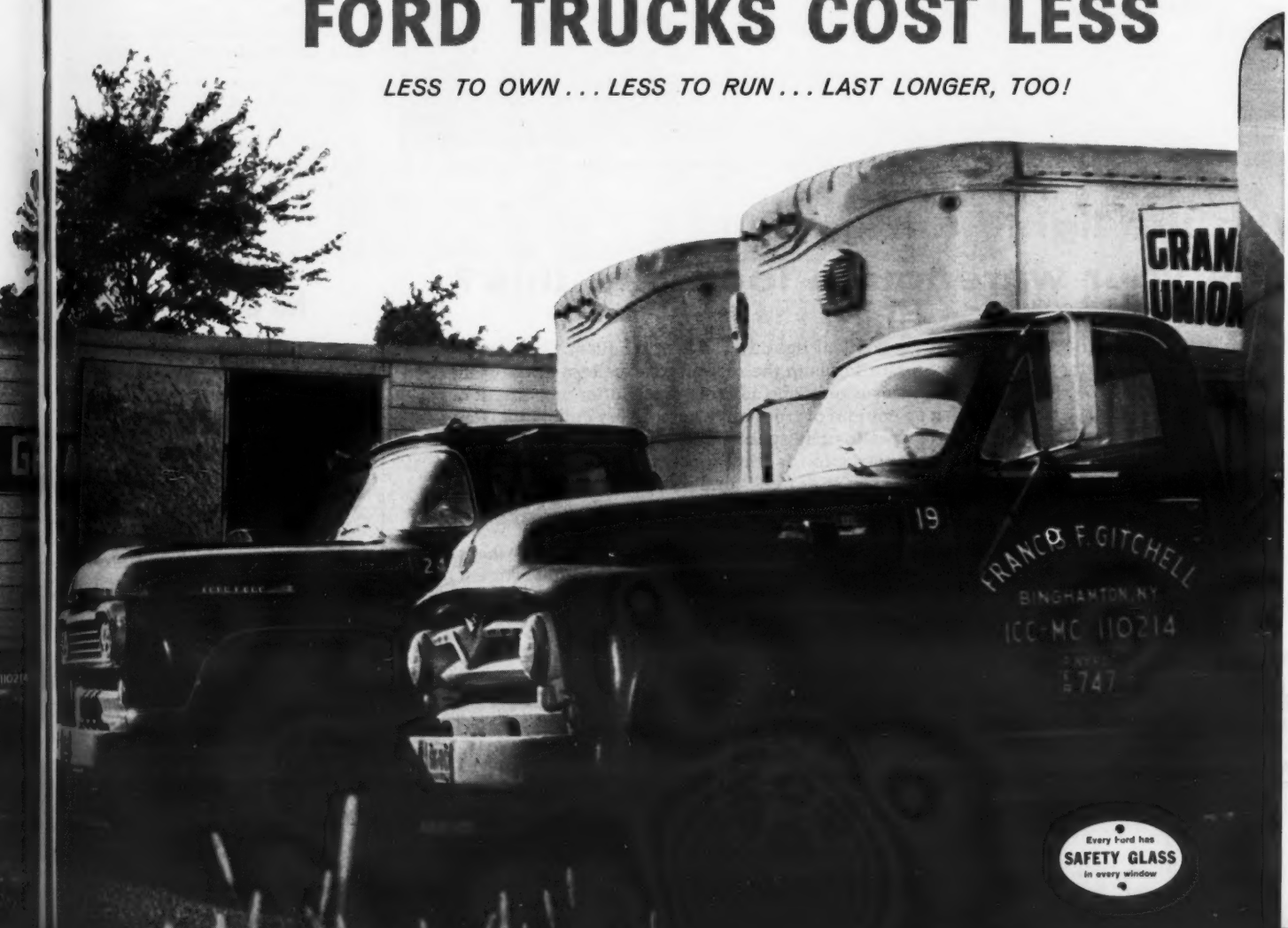

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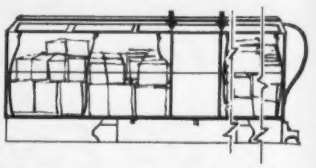


Telescoped cross-section sketch shows full use of car's available cube. Arrows denote welded steel screens which lock to walls, securing one-half car or less

(*Continued from page 73*)

for the effects of heat or cold on the air inside the sacks by a valve at the center reservoir. Pressure can be regulated to suit product.

"Airlocked Cargo" system of built-in pneumatic bulkheads for freight cars was invented by Homer H. Dasey, Oakmont, Pennsylvania.

(Inflatable rubber pressure bulkheads were developed by U.S. Rubber Company, Rockefeller Center, New York 20, New York.)

For more information circle 6301 on Reader Service Slip.

(Low-pressure air system was developed by Westinghouse Air Brake Company, Industrial Products Division, Box 36, Wilmerding, Pa.)

For more information circle 6200 on Reader Service Slip.

No dunnage, no damage

coast-to-coast for fragile mixed load

D. L. ROTHMUND
Traffic Manager
Adolph's, Ltd.
Burbank, Calif.

Problem: Adolph's, Ltd., ships its famous line of dry meat tenderizer, salt substitute, sugar substitute and liquid tenderizer in cartoned 5- and 30-gal containers from West Coast to 34 US warehouses.

Usually, partial stopover unloading is scheduled for such inland centers as Chicago, St. Louis, Detroit, Cleveland.

Using ordinary boxcars,

(*Continued on page 78*)

The warehouse of the Coca-Cola Bottling Company, Las Cruces, New Mexico was photographed in natural light.

With the lights turned out does your warehouse look like this?

Isn't daylight the sensible, economical lighting for a warehouse? Of course—and a Butler warehouse with Lite*Panls in the roof offers excellent daylighting without costly skylights. But this is only one advantage of Butler construction.

Look again! There isn't a column or truss anywhere. Every cubic foot from wall to wall and floor to roof peak is pay space.

On top of this, Butler construction is the lowest-cost way to build well. Assembly and erection are fast. You save weeks and months of costly construction time—are in business and earning profits much sooner. Your completed warehouse is weathertight, fire-safe and requires only a minimum of maintenance. It can be expanded quickly and economically by adding extra bays.

For full details on why Butler warehouses can be your best investment, contact your local Butler Builder. He's listed in the Yellow Pages of your phone book under "Buildings" or "Steel Buildings." Or write directly to us.

BUTLER STEEL PRODUCTS

BUTLER MANUFACTURING COMPANY
7479 East 13th Street, Kansas City 26, Missouri

Manufacturers of Metal Buildings • Equipment for Farming, Dry Cleaning, Oil Production and Transportation, Outdoor Advertising • Contract Manufacturing
Sales offices in Los Angeles and Richmond, Calif. • Houston, Tex. • Birmingham, Ala. • Kansas City, Mo. • Minneapolis, Minn. • Chicago, Ill. • Detroit, Mich. • Cleveland, Ohio
Pittsburgh, Pa. • New York City and Syracuse, N.Y. • Boston, Mass. • Washington, D.C. • Burlington, Ontario, Canada

6199 on Reader Service Slip

Association News

University of California

Davis, has begun something new in teaching brewing technology, with dedication on December 8 of miniature experimental brewery. Course itself, believed to be first of its kind introduced into curriculum of a major American educational institution, will cover complete brewing operation, from cereal preparation to bottling.

USDA Graduate School

has new director, Dr. John B. Holden, recently a specialist in the US Office of Education. School provides added educational opportunities for Federal employees.

Maine Sardine Industry

is under a program where all lots of quarter oil sardines are graded and given a rating of either fancy, extra-standard, standard or sub-standard. Research is continuing on ratings for the mustard and tomato sauce packs.

The General Foods Fund, Inc.

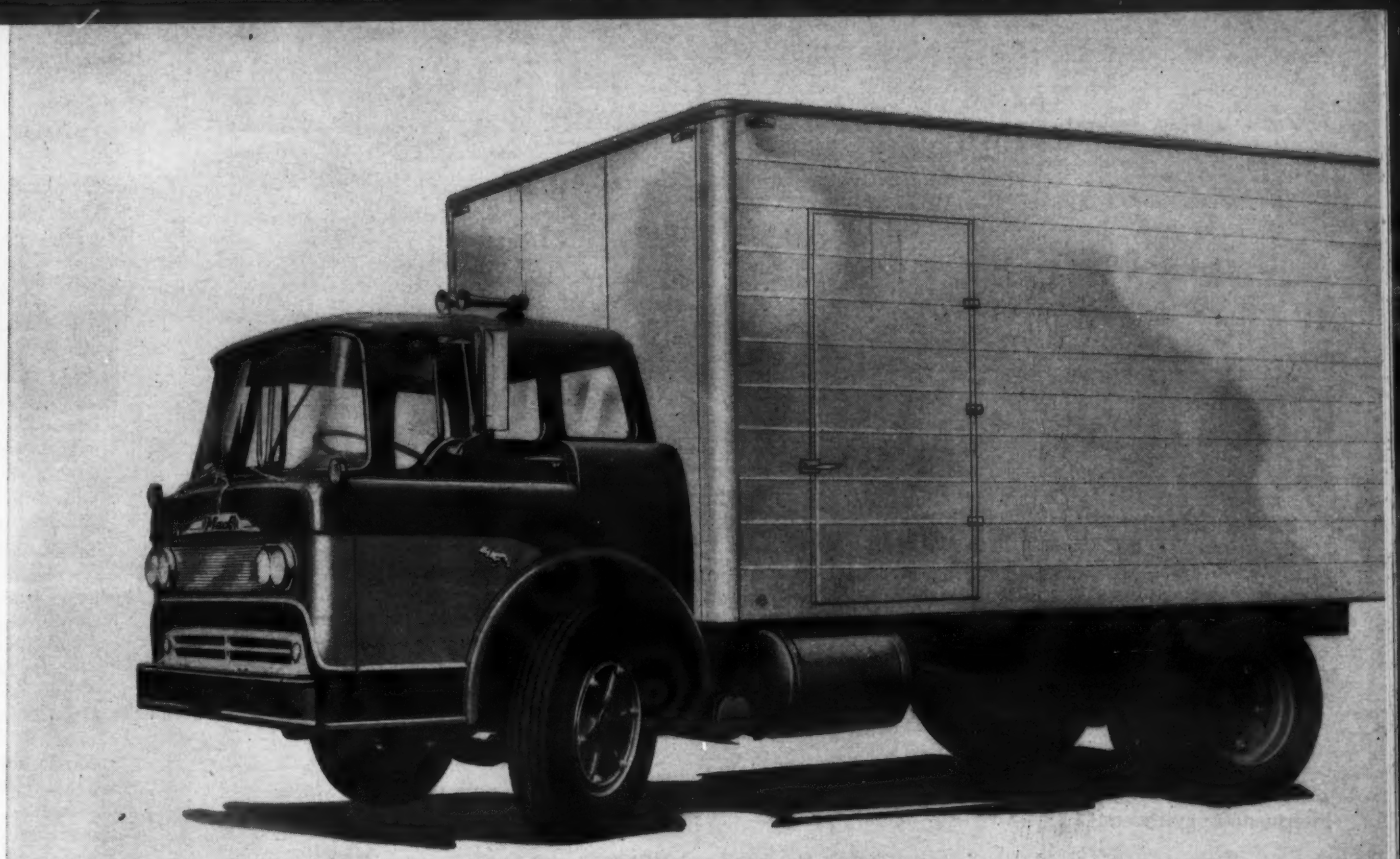
announces grants-in-aid for education totaling $486,000 for calendar 1958. This was an increase of $127,000 over 1957. The Fund has made educational grants of more than $1,786,000 since its formation in 1953.

The Zerban Sugarmen

recently presented Mary F. Hughes, retiring as director of research for Refined Syrups & Sugars, Inc., Yonkers, N. Y., with a specially inscribed scroll. Miss Hughes played an important role in pioneering and developing liquid sugar.

(*More on page 99*)

For more information on product at right, circle 6201 see information request blank opposite last page.



ONLY

NEW MACK MODEL N COE's

give you all these profit-boosting features

- Choice of Mack engines—gasoline, diesel or turbo-charged diesel—from 150 to 205 h.p.
- Tilt-cab action for full engine accessibility
- Truck and tractor models
- Low step-height for easy entry-exit . . . flat floor (on 40 series) for swift exits from either door
- "Executive suite" cab engineered for comfort, fume-free ventilation and smooth-handling controls
- Panoramic, wrap-around 3606-square inch windshield
- Set-back front axle for ⅓:⅔ weight distribution on trucks and maximum front-axle loading on tractors
- Advanced Mack steering systems for utmost maneuverability
- Choice of Mack transmissions (5 to 15 speeds), brakes, frames and suspensions
- 4- or 6-wheel models with option of famous Mack Balanced Bogie

These compact cost-busters give you every feature needed for economy, bonus payloads, and fast action in and out of congested areas. That's why Mack Model N COE trucks and tractors have won immediate acceptance by dollar-conscious operators throughout the nation.

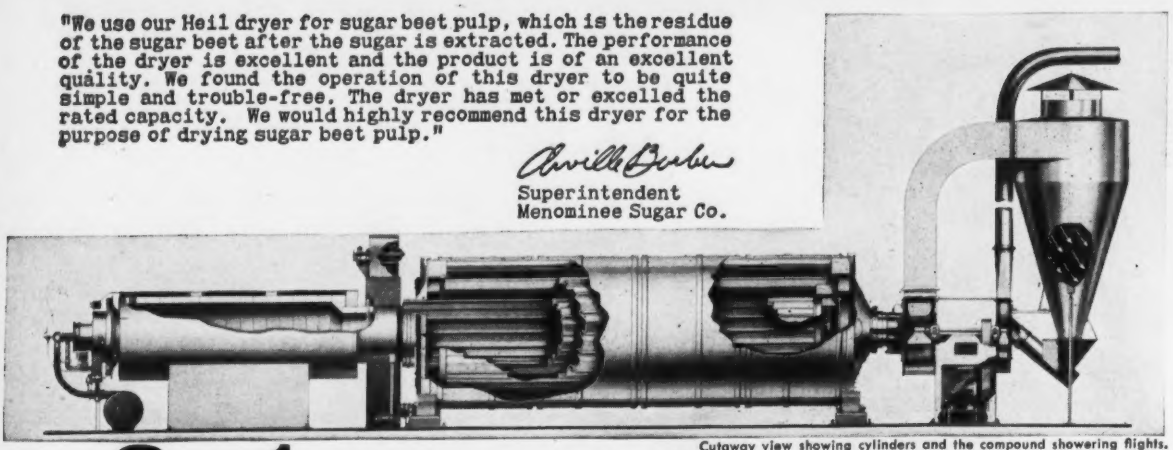
For the names of firms that are already cashing in on the advanced profit-power of Mack Model N's . . . or for a briefing on the Model N that will do as much for you—contact your Mack branch or distributor today! Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

6388

MACK *first name for* TRUCKS

"We use our Heil dryer for sugar beet pulp, which is the residue of the sugar beet after the sugar is extracted. The performance of the dryer is excellent and the product is of an excellent quality. We found the operation of this dryer to be quite simple and trouble-free. The dryer has met or excelled the rated capacity. We would highly recommend this dryer for the purpose of drying sugar beet pulp."

Orville Barber
Superintendent
Menominee Sugar Co.



Cutaway view showing cylinders and the compound showering flights.

3-in-1 dryer controls moisture

Food by-products are carried on a stream of hot air in the Heil dryer. Having three cylinders in one drum accurately controls moisture and lowers costs by —

- Automatically providing a 3-stage drying process with changing temperatures and air velocities ideally suited to changing moisture content.
- Automatically establishing correct exposure time for each particle, based upon weight due to moisture content.
- Making use of radiant heat given off by center and intermediate cylinders.

Compound showering flights assure ideal utilization of the drying medium, maximum air activity in all areas of the drying drum, and maximum evaporating capacities within a compact machine.

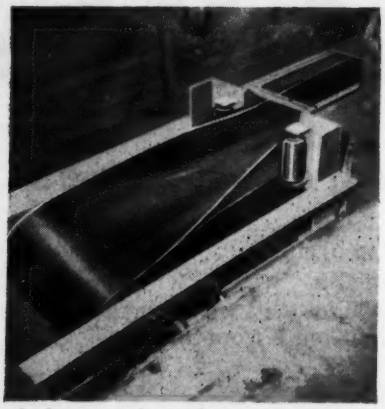
WRITE, WIRE or CALL for further information.

THE HEIL CO.

(Manufacturers of Ardrier Dehydrators for the Arnold Dryer Co.)
3000 W. Montana Street, Milwaukee 1, Wisconsin

6202 on Reader Service Slip

WORLD'S MOST SANITARY CONVEYOR BELT!



Labor saving alone pays for belting in a matter of weeks!

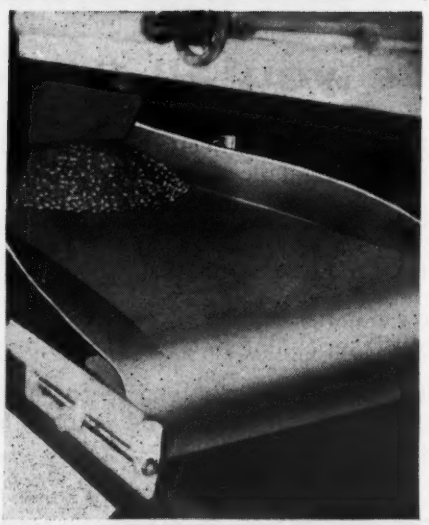
Dura Flex-Wall flanges are an integral part of the belt eliminating necessity of cleaning separate sideboards or troughs. Labor saved in only a few weeks pays off the investment, and, product losses due to an excessive bacteria count is eliminated, making Flex-Wall Belting a "MUST" for your plant!

FREE BROCHURE: Contains complete information on Dura-Belting's exclusive features, plus illustrations and descriptions. Write today for your copy and a free slide rule.

Dura Flex-Wall Belting

Your Present Belt Will Accommodate Flex-Wall Belting with only minor changes!

- A practical way to improve sanitation by eliminating product contact with stationary sideboards or troughed sides
- Special patented construction assures longer life than ordinary flat belt
- Forms own flanges as high as you want them
- Goes around pulleys as small as 3 inches regardless of height of flanges
- Taste-proof and Non-Toxic Neoprene Compound



Dura Belting Co. Inc. 715 Heinz Ave., Berkeley 10, Calif.

6203 on Reader Service Slip

Dunnage-free cars safely permit nearly twice the payload of ordinary boxcars

(*Continued from page* 76)

company spent $200 per car to buy, construct and install intricate bracing — could load only 40,000 lb per car, or half car's capacity.

Despite this, loads frequently would arrive a mess. Damage claims averaged $75 a carload.

Most costly headache involved customer goodwill. Containers would be broken somewhere within the cartons. Because cartons are small and tight, it was practically impossible to detect damage until they were actually opened for shelf-stocking — perhaps 30 to 60 days later.

Solution: Company turned to DF (damage-free, dunnage-free) Loaders, provided by railroad at no extra charge.

Cars have permanent belt rails, steel-reinforced crossmembers with retractable locking tip, portable bulkheads and deckboards.

This equipment permits locking the lading at any half-inch interval throughout car, and from deck to ceiling without pressure on bottom layers.

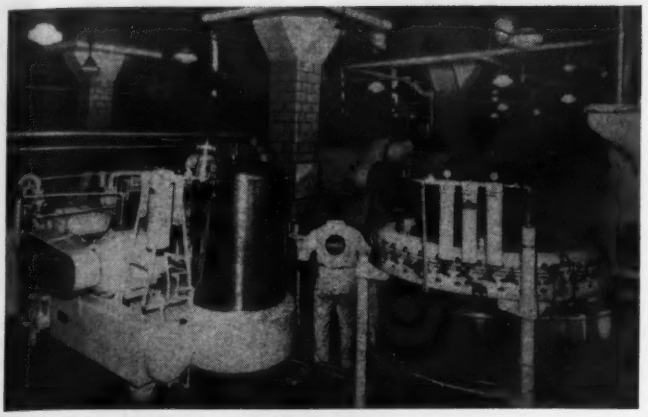
Results: Cost of loading DF cars is about $30, as compared with $200 Adolph's used to spend for dunnage and labor in old-style boxcars.

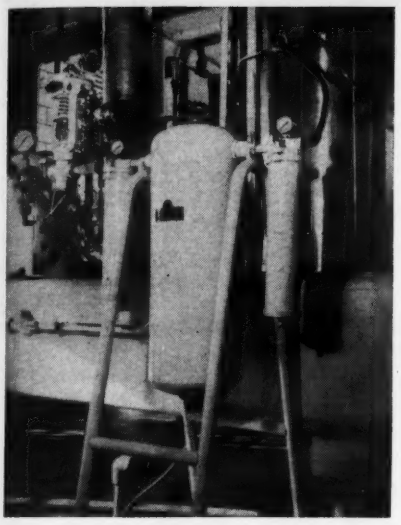
Effective payload has been upped from 40,000 to 80,000 lb.

Damage claims and customer dissatisfaction have been reduced nearly to vanishing point.

(DF Loader freight cars are manufactured by Evans Products Company, Plymouth, Michigan.)

For more information circle 6204 on Reader Service Slip.





Purification system for both CO_2 and compressed air are shown in above view of a Coca-Cola bottling plant. At right are the three cylinders making up the unit in the air line to the counter pressure chamber on the bottle filter. To the left is the larger filtering unit in the CO_2 supply to the carbonator

Closeup view of unit for filtering CO_2 supply to a carbonator shows chambers containing diatomaceous earthen ceramic candles on either side of a chamber of activated carbon

Eliminates contamination in CO_2 and compressed air

Gas and air purification system used by Coca-Cola bottling company removes sub-micron particles, oil vapors and objectionable odors

Problem: In bottling carbonated beverages, minute traces of oil and other impurities in the CO_2 flattens the beverage as well as imparting an objectionable odor to the drink.

Compressed air, used with a counter pressure chamber on the bottle filter, presents further problems of contamination which is nearly always present in the air supply to a varying degree.

Solution: A purification system used in both CO_2 and compressed air lines removes sub-micron particles, oil vapors and objectionable odors.

(Continued on next page)

Planning ahead can save $20,000 on fluid mixing

An idea from your LIGHTNIN Mixer representative's briefcase

This engineer is listening to an idea that's going to save his company $20,000 on fluid mixing.

He's working on a process that will employ mechanical mixers. But in a year or so, process requirements are expected to change, throwing 15% greater load on the mixers.

Problem: how can he anticipate this change *now?*

Solution proposed by LIGHTNIN Mixer representative: install standard turbine-type LIGHTNIN Mixers geared for the immediate job, but sized to handle the expected load.

When requirements increase, simply change impellers and two gears in each mixer—providing correct power input for the new conditions at minimum expense.

What this man can do for you

This is one example of the many ways your LIGHTNIN representative can help you get efficient fluid mixing at lowest long-term cost.

He can give you better service on fluid mixing than anyone else—because he has seen and done more of it.

Take advantage of his unmatched experience by putting him on your process-design team. For prompt help on any fluid mixing operation, call him in now. He's listed in Chemical Engineering Catalog. Or write us direct.

Lightnin® Mixers

MIXCO fluid mixing specialists

MIXING EQUIPMENT Co., Inc., 132-b Mt. Read Blvd., Rochester 3, N.Y.

In Canada: Greey Mixing Equipment, Ltd., 100 Miranda Ave., Toronto 19, Ont.

6205 on Reader Service Slip

Modernizing Urgent for Macaroni Plants

Bakeries Modernize to Stay Solvent

IS PROFIT-EATING EQUIPMENT MAKING THESE HEADLINES IN YOUR PLANTS?

Antiquated Ideas Obsolete the Designs

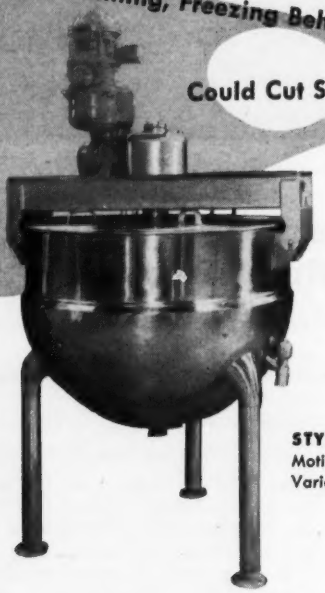
Meat Operations Extra Obsolete

Dairy Modernizes for Profitable Products

Candy Plants Need Overhaul

Canning, Freezing Behind Times

Could Cut Soup Costs 50%



STYLE SA Double Motion Mix Cooker Variable Speed Drive

Has obsolete high-cost production machinery reduced your profits? If so: MODERNIZE.

Hamilton produces equipment that can show you how more can be accomplished in less time, and with quality assured through modern equipment and mechanical controls, rather than by human skills at high wages.

Hamilton equipment can brighten your profit picture.

Write for Catalogue

ESTABLISHED 1876

HAMILTON Kettles

COPPER AND BRASS WORKS

DIVISION OF BRIGHTON CORP.

820 STATE AVENUE, CINCINNATI 4, OHIO

6206 on Reader Service Slip

(*Continued from preceding page*)

System consists of a pair of diatomaceous earthen ceramic filter elements installed on either side of a canister of activated carbon (See photos).

The first ceramic candle filters out solid particles entrained in the gas and also absorbs any oil aerosols present.

Then, as the gas stream passes through the chamber of activated carbon, the second step in purification, all odors are removed by adsorption, and aldehydes are reduced to a few parts per million.

The diatomaceous filter in the third and final chamber is of fine porosity and extracts yeast spores, mold, bacteria and any other particles that might be present.

Approximately 99.9 per cent silica, the filter candle is inert and designed for low pressure drop.

The smaller its pores, the greater the pressure drop, but the finer the particles which are removed.

Thus, a candle with a three psi pressure drop will remove particles of the 9 to 9.5 micron size. A 19-psi candle will eliminate even sub-micron particles.

Results: Originally installed in one plant, air and gas purification units have been so satisfactory that they have been installed in most Coca-Cola bottling plants in the country.

The only maintenance required for units is an occasional back-washing with trichloroethylene and light sanding of the surface.

Depending upon contaminating conditions, filter candles will give from 6 months to 15 years of service with little attention.

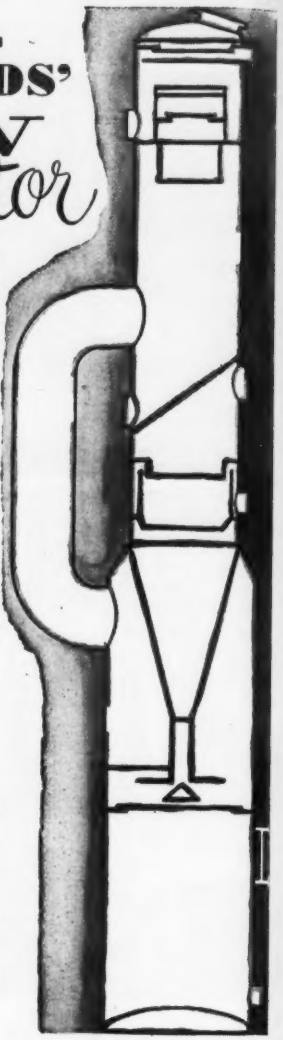
As the activated carbon becomes saturated with adsorbed odors and vapors, it may be easily removed from the second chamber and replaced.

Other Applications: Gas and air purification system also suggests possible use in other applications.

Liquids such as corn and soybean oil may be filtered and deodorized for taste and clarity.

Furthermore, mold and yeast

CROLL-REYNOLDS' NEW Convactor



If you never heard of a CONVACTOR, do not be surprised. It is an entirely new design of special condensing tower which offers important processing advantages.

In the refining of edible oils it recovers fatty acids, most of which were formerly waste. It offers another advantage of totally eliminating stream pollution from this source or the expense of cleaning cooling towers which collect such deposits. It has similar application in fatty acid stills, some other types of distillation processes, dryers, and other large vacuum processing units.

The CONVACTOR is a combination of two condensers and a vacuum cooling chamber. One condenser is of conventional barometric design, the other a highly improved condenser working on the jet principle. The latter condenses the vapor from the process and discharges directly into the vacuum cooling compartment for the immediate removal of condensation heat. The cold water is then recirculated through the same jet condenser. The flashed vapor from the cooling operation is condensed in a conventional barometric condenser using water from a river, cooling tower or other industrial source. Periodic blow-down or continuous bleed-off from the flash chamber permits recovery. Several large industrial installations have been made.

CROLL C-R REYNOLDS

PATENT APPLIED FOR

Croll-Reynolds CO., INC.

Main Office: 751 Central Avenue, Westfield, N. J.

New York Office: 17 John Street, N. Y. 38, N. Y.

CHILL-VACTORS • STEAM-JET EVACTORS • AQUA-VACTORS • FUME SCRUBBERS • SPECIAL JET APPARATUS

6207 on Reader Service Slip

spores that contaminate and shorten the life of vegetable shortenings and emulsions can be eliminated in processing.

Such a system has been used to reclaim about 40 barrels of choice Kentucky bourbon that had become oil contaminated.

Gas and air purification system was developed through the combined efforts of The Allen Industrial Filter Co. and National Carbon Co., Div. of Union Carbide Corp.

Activated Carbon, used in system, is supplied in bulk quantities by National Carbon Co., Div. of Union Carbide Corporation.

(Compressed air and CO_2 units used in purification system are available from The Allen Industrial Filter Co., 25 S. St. Clair St., Toledo, Ohio.)

For more information circle 6208 on Reader Service Slip.

Blends, discharges dry or liquid-dry mixtures in continuous flow

Continuous flow blender blends and discharges a wide range of dry materials, either with other dry materials or with liquids.

Unit has broad application in the food industry for mixing and blending everything from cereal to powdered soups.

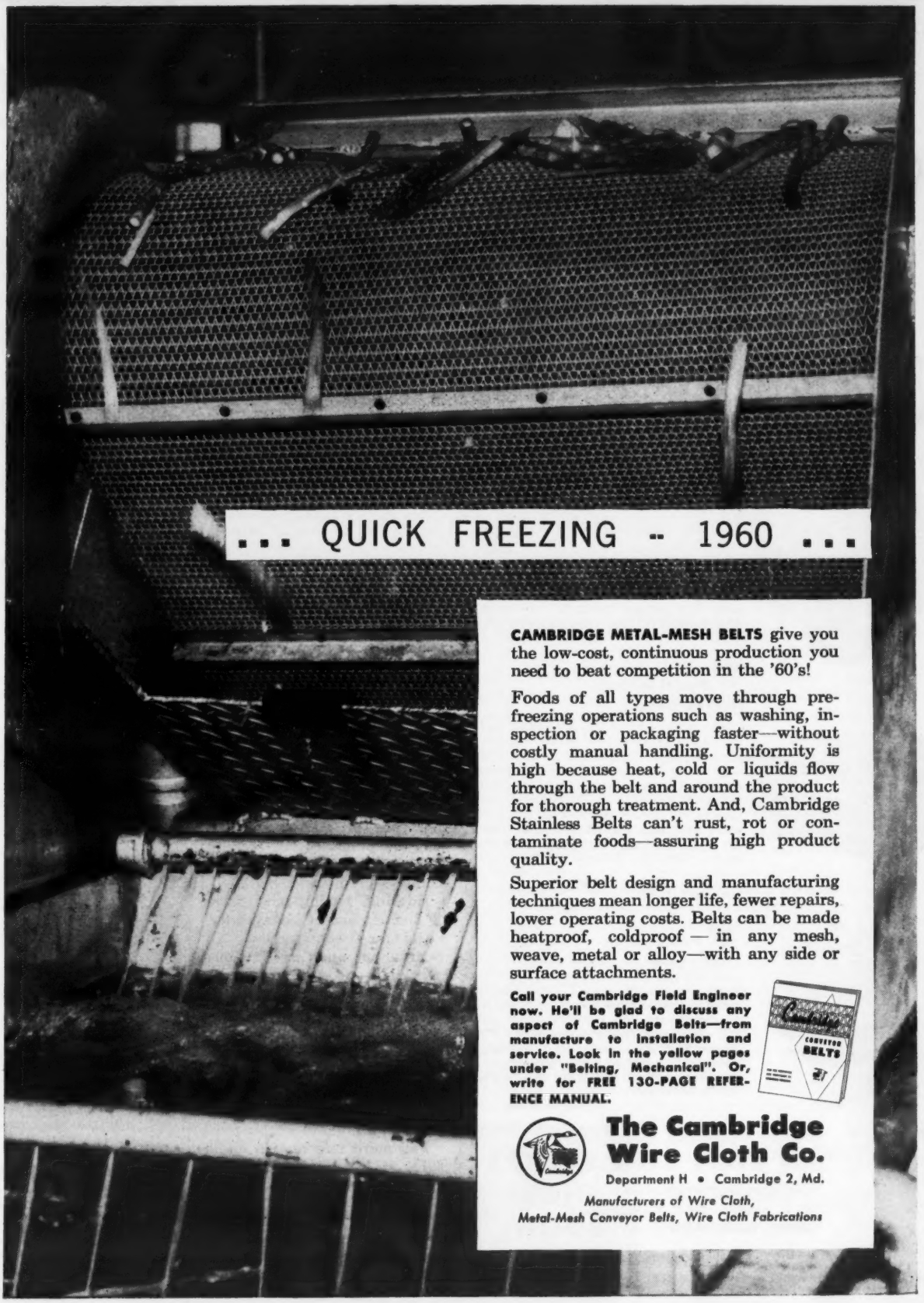
Materials to be blended are fed into the blender, by controlled volumetric feeding equipment, onto the apex of a cone (See diagram next page).

This cone is the first step in blending of solids. It causes material to form a circular falling curtain as it leaves the base periphery of the cone.

At the base of the cone, spray headers may be provided to evenly disperse any desired liquids into the mixture. Liquid is sprayed on the blended dry material from both inside and outside the curtain as it falls onto a retention plate.

Further blending of solids and liquids is made on the retention plate by mixing blades that automatically discharge

(*Continued on next page*)

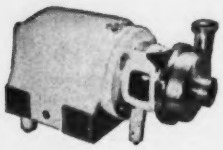

... QUICK FREEZING -- 1960 ...
CAMBRIDGE METAL-MESH BELTS give you the low-cost, continuous production you need to beat competition in the '60's!
Foods of all types move through pre-freezing operations such as washing, inspection or packaging faster—without costly manual handling. Uniformity is high because heat, cold or liquids flow through the belt and around the product for thorough treatment. And, Cambridge Stainless Belts can't rust, rot or contaminate foods—assuring high product quality.
Superior belt design and manufacturing techniques mean longer life, fewer repairs, lower operating costs. Belts can be made heatproof, coldproof — in any mesh, weave, metal or alloy—with any side or surface attachments.
Call your Cambridge Field Engineer now. He'll be glad to discuss any aspect of Cambridge Belts—from manufacture to installation and service. Look in the yellow pages under "Belting, Mechanical". Or, write for FREE 130-PAGE REFERENCE MANUAL.
CONVEYOR BELTS
The Cambridge Wire Cloth Co.
Department H • Cambridge 2, Md.
Manufacturers of Wire Cloth, Metal-Mesh Conveyor Belts, Wire Cloth Fabrications

6209 on Reader Service Slip

Put Them to Work This Season...

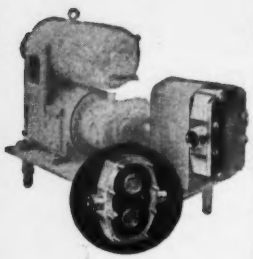
CP Cost Cutters

Sanitary Centrifugal Stainless Steel Pumps



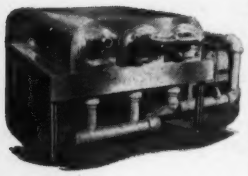
Ruggedly built to reduce maintenance costs with special emphasis on economical fast cleaning. Can be dismantled without tools. Complete range of sizes and capacities to match the pump to the job—buying exactly what you need saves you money and operating cost. Pump both product and cleaning solution. Write for Bulletin H-1200.

ROTARY Pumps
Sanitary, Positive Type



New rotors with specially designed resilient surfaces. Parts can be replaced *on the job* in ten minutes or less when necessary. The perfect pump for metering flow of medium to high viscosity liquids. Write for Bulletin H-1290.

Swept Surface Heat Exchanger



Cuts costs of continuous heating and cooling of liquids and semi-solids; also ultra-H.T.S.T. pasteurizing. Cools to —30° F. or heats to 300° F. or higher. Heat exchange is uniform and efficient for entire run because Displacer-Mixer Blades continuously sweep product away from heat transfer surface. Ideal for heavy-bodied syrups and concentrates. Write for Bulletin E-1300.

Also Plate Heat Exchangers—Bulletin E-1153.

Refrigeration

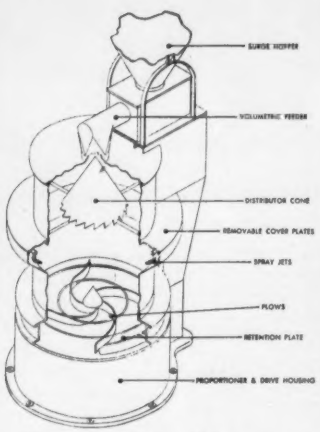
Double savings: compact design saves valuable space—extra rugged construction saves maintenance. Choose exactly what you need from a complete line of Compressors and Boosters—and get the *extra* benefits that come from CP's generations of experience in building refrigeration systems serving many industries—and serving them well. Write for Bulletin V-18.

THE *Creamery Package* MFG. COMPANY

General and Export Offices:
1243 W. Washington Blvd., Chicago 7, Ill.
CREAMERY PACKAGE MFG. CO. OF CANADA, LTD.
267 King St. W., Toronto 2B, Ontario

CANNERS SHOW BOOTH No. 51

6210 on Reader Service Slip



Dry materials are fed proportionately into blender, by controlled volumetric feeding equipment, onto the apex of the cone. Spray headers, at base of cone, disperse any desired liquid into mixture in any proportions desired. Further blending of solids and liquids is made on retention plate by mixing blades that automatically discharge blended material

(*Continued from preceding page*)

blended material in a continuous flow.

To achieve accurate proportioning of solids and liquids, liquids are precisely metered and spraying is timed to flow of solid material.

Controlled wetting imparts as little as a fraction of one per cent of moisture, or it may be precisely adjusted to add any specific amount of liquid desired.

Housing, feeding and drive of blender are of heavy-duty, sanitary construction. All wear areas, such as distribution cone and retention plate, may be reinforced with removable wear plates.

(Continuous flow blender for dry or liquid-dry mixtures (Verticone) is a product of The Johnson-March Corp., 1724 Chestnut St., Philadelphia 3, Pa.)

For more information circle 6211 on Reader Service Slip.

Need further information?

Use the convenient Reader Service Slip opposite the back inside cover.

The CONVEYOR BELT that RESISTS ACIDS HEAT, GREASE and WATER

LATEX CONVEYOR BELTING for CANNERIES & DAIRIES

200 SIZES
35 WIDTHS
7 THICKNESSES

Economy-minded canners and dairy men have found in our LATEX belt the answer to all their problems. This solid-woven cotton belt is impregnated and coated with neoprene latex and is completely resistant to water, acids, grease and heat. Odorless and pliable to –40°F., this high tensile belt not only has a LONGER LIFE expectancy than most belts but COSTS LESS. Loaded with special features for canners, dairies and food storage plants, yet it's in the price range of run-of-the-mill conveyor belts. Get the facts and you'll decide on BUFFALO LATEX.

Send for Free Manual

that fully illustrates and describes our belts, their sizes, prices and uses.

BUFFALO WEAVING AND BELTING CO., INC.
204 CHANDLER STREET BUFFALO 7, NEW WORK
NEW YORK • CHICAGO
We also manufacture a complete line of WEBBINGS & PURE SHEET RUBBER

6212 on Reader Service Slip

Hardens up to 750 gal ice cream/hr in pint, quart, ½ gal sizes

Freezing plates adjust automatically to carton thickness

Uses: Radial ice cream hardener hardens up to 750 gallons of ice cream per hour, depending on refrigerant temperature, in rectangular pint, quart, or half-gallon size cartons.

Features: Unit is completely automatic for handling of a specific size carton and freezing plates adjust automatically to carton thickness.

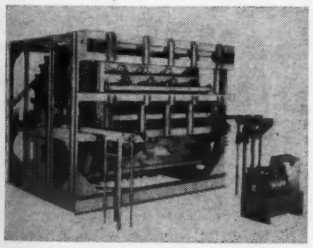
Changeover of carton size is accomplished by turning two selector switches that control assembly pattern, and by making slight adjustment of conveyor guide rails.

Compact unit saves up to 40 per cent floor space as well as saving the time of three operating personnel required by wind-tunnels for comparable production.

Quick-freeze principle of hardener enhances product quality by providing a finer crystalline texture.

Description: Hardener consists of 30 pairs of parallel plates that radiate from a central hollow support drum. Each plate incorporates serpentine-shaped passes through which refrigerant is continuously circulated.

The lower plate of each set is fixed to the drum in a stationary position. The upper plate floats, supported by arms

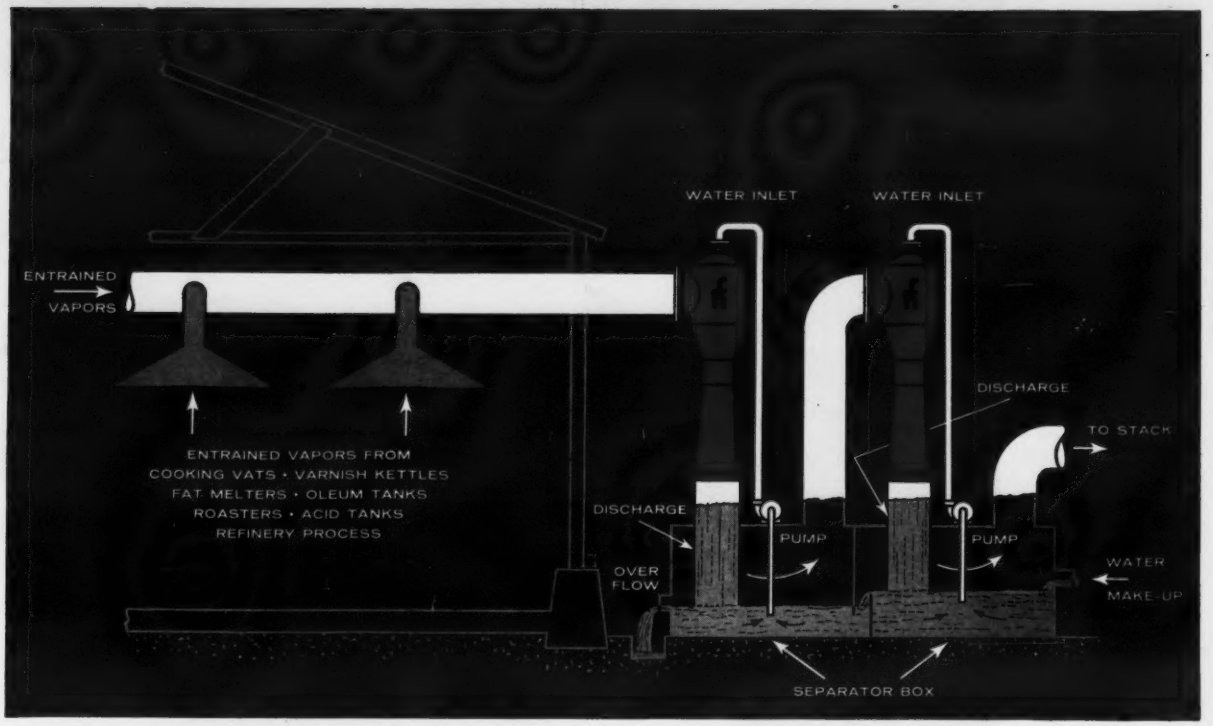


With certain modifications, ice cream hardener may be adapted to carton size ranges other than pints, quarts and half-gallons

which are pivoted on the drum.

A series of 12 coil springs are attached to the bottom of

(*Continued on page* 85)



CONTROL OBJECTIONABLE FUMES, GASES, VAPORS

with an economical SK Fume Scrubber

Photo and sectional drawing of an SK Fig. 4010 Fume Scrubber

A food plant in California uses an SK Fume Scrubber to condense steam and scrub oil vapors from cooking vats. A large chemical manufacturing plant on the eastern seaboard uses a battery of SK Fume Scrubbers to condense steam and purge entrained gas containing H_2SO_4, SO_2, H_2S, TiO_2, and ore dust. A mid-western manufacturer uses SK Fume Scrubbers to vent oleum tanks. A soap maker in Pennsylvania uses a scrubber to remove ammonia fumes from a plant building and cool the building at the same time.

From coast to coast, chemical and food processing plants, refineries, paint and varnish manufacturers, fertilizer, and other manufacturing plants are using SK Fume Scrubbers to control objectionable—sometimes dangerous—fumes, gases, vapors, and dusts.

These manufacturers have found that SK Fume Scrubbers are reasonably low in initial cost, require little maintenance, and are an effective means for conforming to local ordinances which prohibit the pollution of air.

Made in a wide range of sizes from cast iron, steel plate, Haveg, stoneware, or other materials or with linings of rubber or Polyvinyl Chloride, or other synthetic materials, SK Fume Scrubbers can help you solve a fume or dust problem. Why not get the whole story. Send for Bulletin 4R which contains complete information on SK Fume Scrubbers.

JET APPARATUS: Ask for Condensed Bulletin J-1.
ROTAMETERS & FLOW INDICATORS: Ask for Condensed Bulletin 10-RA.
VALVES: Ask for Condensed Bulletin V-1.
HEAT TRANSFER APPARATUS: Ask for Condensed Bulletin HT-1.
GEAR PUMPS: Ask for Bulletin 17-A.

Schutte and Koerting
COMPANY
MANUFACTURING ENGINEERS SINCE 1876
2265 State Road, Cornwells Heights, Bucks County, Pa.

6213 on Reader Service Slip

Stokely's
Finest
PICTSWEET
Pure
ORANGE
JUICE
CONTENTS
6 FL. OZ.

(Continued from page 83)
the fixed plate and to the top of the floating plate. This provides a constant, uniform pressure on the load of cartons residing between each set of plates, and insures positive contact of plates and cartons.

When a given set of plates has completed its freezing cycle, and is positioned for discharge, the upper plate is raised by cam action, releasing pressure on the frozen cartons and allowing them to be discharged.

Loading and discharging of cartons takes place simultaneously on a given pair of plates.

An electric counter, set to a predetermined count — depending upon carton size — controls the pattern assembly of the cartons and automatically activates a feed plunger that transfers the cartons onto the freezer plate.

Meanwhile, an independent bar-type mechanism activated by the completion of the plate indexing cycle, removes the frozen carton from the plate.

(Radial ice cream hardener is a development of Food Machinery and Chemical Corp., Canning Machinery Div., PO Box 1120, San Jose, Calif.)

For more information circle 6215 on Reader Service Slip.

Occupying space of only two barrels, plasticizing unit produces . . .

600 to 800 lb of solid shortening/hr

Uses: For converting liquid, hydrogenated vegetable oil to solid shortening.

Also produces emulsified or bakers margarine.

Features: Occupying area of only two barrels, unit offers savings of space.

One man may operate unit, since no labor is required to bring barrels in and out of plant. Barrels in use do not have to be completely emptied since they are used over

(Continued on next page)

Profitable Brands Start With Cherry-Burrell

Refreshing. Cool. Delicious. The fresh flavor of newly picked and just squeezed oranges rates Pictsweet and Stokely's Finest two of the popular, first choice brands. Homemakers can rely on that refreshing flavor. They buy with confidence again and again.

Stokely Van Camp, Inc. relies on Cherry-Burrell Aro-Vac Flavorizers to keep Pictsweet and Stokely's Finest tasting uniformly fresh. To take peel oil flavor out without damaging the delicate, natural flavor of the juice.

C-B Aro-Vacs use a steam and vacuum treatment to remove unwanted odors and taints from any liquid. The product is first quickly heated with purified, dry, unsaturated steam. The heat volatilizes unwanted materials and they are drawn off as vapor from chamber top. Then the product enters a vacuum chamber where condensed steam flashes into vapor and is pumped away with other gaseous off-flavors.

The instantaneous heating and cooling eliminates any heat damage. Doesn't change the natural flavor.

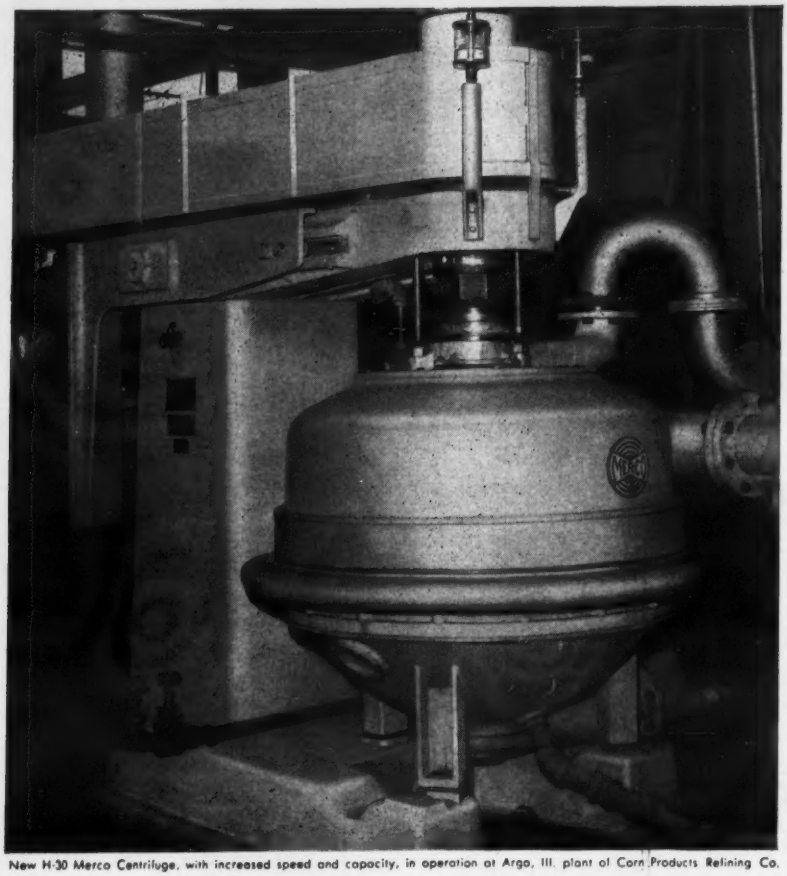
A Cherry-Burrell Sales Engineer will be glad to show you how an Aro-Vac Flavorizer will improve your product's flavor. Keep it uniformly good. And selling consistently. There's no obligation whatsoever. Call or write him today.

Sales and Service in 58 cities

CHERRY-BURRELL CORPORATION
CEDAR RAPIDS, IOWA

Food • Dairy • Farm • Brewing • Beverage • Chemical • Equipment and Supplies

6214 on Reader Service Slip



New H-30 Merco Centrifuge, with increased speed and capacity, in operation at Argo, Ill. plant of Corn Products Refining Co.

NOW...
increased capacity in NEW MERCO CENTRIFUGE for nozzle bowl applications

Rotor speeds up to 3300 rpm and capacities up to 600 gpm are now possible with the new, improved H-30 Merco Centrifuge. At the same time, power requirements per gallon of feed have been substantially reduced,

This new operating efficiency is a result of improvements in rotor design, which provides greater disc area. Feed passages have been enlarged to accommodate increased flow.

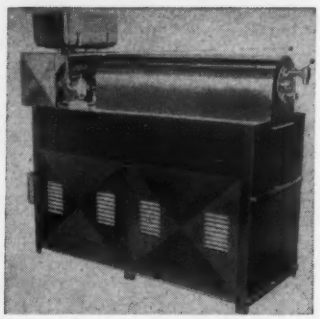
The new Merco H-30 Centrifuge is particularly useful for clarification and thickening of slurries which contain fine solids (0.5 micron) over a wide range of feed solids concentrations (.02% and up). It is now available with a 30" stainless steel rotor and bronze or stainless steel housing. In addition to its new large capacity and higher speed, it has such well-established features as the return flow principle, clog free nozzle, and overhead drive.

If yours is a process that needs a large capacity centrifuge, there is a place for the Merco H-30 in your plant. For further information, write to Dorr-Oliver Incorporated, Stamford, Connecticut.

DORR-OLIVER INCORPORATED
WORLD WIDE RESEARCH • ENGINEERING • EQUIPMENT
STAMFORD • CONNECTICUT • U. S. A.

Merco—Reg. U.S. Pat. Off.

6216 on Reader Service Slip



Plasticizing machine is 63" high, 68" long and 27" wide

(*Continued from preceding page*)
and over again.

Description: Bulk oil may be stored in a tank remote from machine and piped directly to plasticizer.

Operation on freon, eliminates use of a brine tank and nitrogen blanket. Thus, it is a continuous system of sanitary design.

Plasticizing machine is constructed of stainless steel both inside and out.

(Crown Plasticizing Machine is product of Flow Equipment Corp., 123 Dell Glen Ave., Lodi, N. J.)

For more information circle 6217 on Reader Service Slip.

Lists specifications for steam and hot water generators

Specification sheets on steam and hot water generators make up a 64-page brochure.

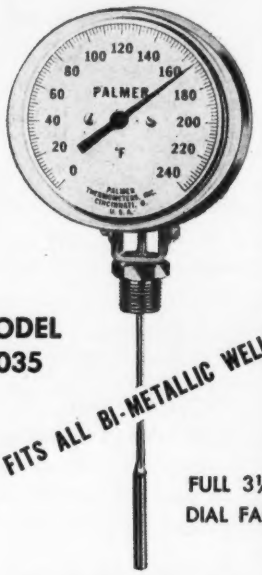
Brochure is divided into various sections including general information, steam generator, hot water generators, boiler feed water systems and marine steam generators.

Each of ten of a new line of hot water models are given a complete page, with full description and specifications.

Each model-page for all generators has an engineer's drawing of the appropriate model. A conventional picture of a typical model is also included, but the drawing is the center of interest.

("Cyclotherm Steam and Hot Water Generators" specifica-

Outstanding Accuracy
PALMER
Dial Thermometer



Check these functional features

- Direct-drive Bourdon Coil with a filled system for longer lasting accuracy.
- Stem can be placed at any desired angle and case can be rotated to most readable position.
- External calibration for zero setting.
- Unaffected by stem alignment.
- Accurate to one scale division.
- No sticking at any temperature.
- Non-corrosive case.

PALMER
THERMOMETERS, INC.
Mfrs. of Industrial Laboratory, Recording and Dial Thermometers
2515 Norwood Ave., Cincinnati 12, O.

6218 on Reader Service Slip

tion sheets are available from Cyclotherm Div., National U.S. Radiator Corp., Oswego, N.Y.)

For your copy simply circle 6219 on Reader Service Slip.

Concentrates materials to densities impossible in conventional evaporators

Uses-Features: Evaporator concentrates wide range of viscous, foamy or heat-sensitive materials to densities impossible with conventional tubular evaporators.

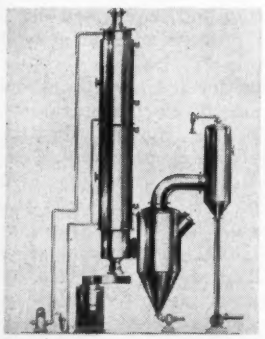
Machine's turbulent, thin-film action and controlled contact time between product and heating medium, result in superior heat transfer rates.

Unit features true down-flow principle in which liquor and vapor pass vertically down central vaporization tube.

They then discharge into a centrifugal liquor-vapor separator.

There is no possibility of entrainment re-run, or reflux of product with loss of properties due to overheating.

Because of very short contact time between product and heating surface, temperatures may be utilized which are usually regarded as critical for heat sensitive materials.



Materials of construction for evaporator are selected upon requirements of product to be processed

Description: Vaporization tube is jacketed to provide for heating or cooling of product.

A spinning rotor agitates thin film of liquid into violent turbulent action as it flows downward. Thus, burn-on and

(*Continued on next page*)

CRCO* "SAY "SEE-AR-CO"

PRESENTS

Hydron

THE HYDROSTATIC CONTINUOUS PRESSURE COOKER-COOLER THAT MAKES ROTARY STERILIZERS AND RETORTS OLD FASHIONED

Flexible — will handle 4 can diameters or 4 products at same time without mixing at process temperatures up to 262°F.

No-shock, balanced internal and external pressures on cans and contents.

Consistent sterilization — all cans exposed alike.

No agitation, except five 180° turns that prevent packing or adhesion of product.

Slow "bring up" and "bring down" of temperature improves product quality in color, texture and flavor.

Will handle can diameters from 202 to 404 without change of parts or adjustment at capacities up to and over 1000 C.P.M.

Saves labor, space, steam and water.

"Here's the first North American **HYDRON** installation"

Patented and manufactured in the United Kingdom by Mitchell Engineering Ltd., Peterborough, England with exclusive sales and manufacturing rights for the U.S. by CRCO.

See us at booth 9 NCA Convention Exhibit for more information.

THE BEST OF Everything

CHISHOLM-RYDER CO. INC.
Niagara Falls, New York
FOR THE FOOD PROCESSOR

6220 on Reader Service Slip

(*Continued from preceding page*)

localized encrustation due to overheating are eliminated.

Rotor blades are fitted to wipe vaporization tube wall within a small fraction of an inch through entire length of rotor.

Entire rotor assembly may be removed from either end of vaporization section.

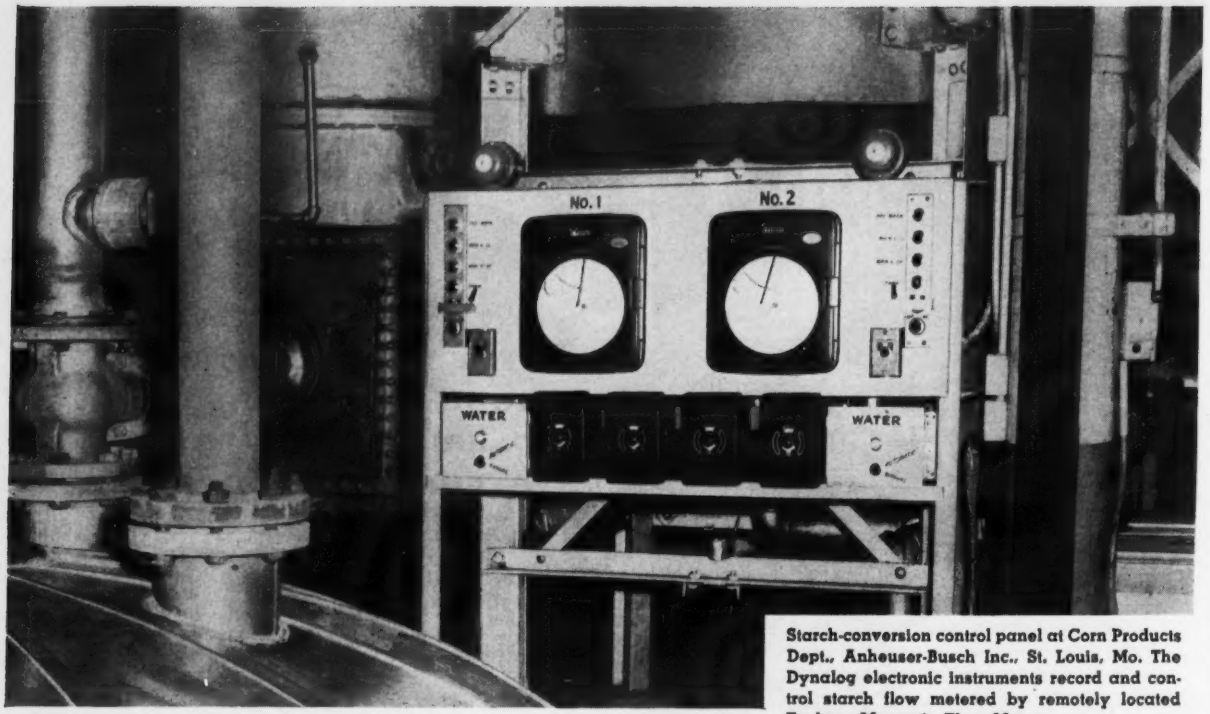
Observation glasses, vacuum controls and a sampler connection provide for closely supervised operation.

Quick opening manholes provide access to bearings, packing glands and seals for easy maintenance.

Motor and driving mechanisms are floor-mounted for convenient inspection. Clean-in-place fittings are available for wash-down without disassembly.

(Agitated film ROTO-VAK evaporator is a development of Buflovak Equipment Div., Blaw-Knox Co., Buffalo, N.Y.)

For more information circle 6222 on Reader Service Slip.



Starch-conversion control panel at Corn Products Dept., Anheuser-Busch Inc., St. Louis, Mo. The Dynalog electronic instruments record and control starch flow metered by remotely located Foxboro Magnetic Flow Meters.

ANHEUSER-BUSCH CUTS NEW EQUIPMENT COSTS — IMPROVES STARCH CONVERSION

with Foxboro Magnetic Flow Meters

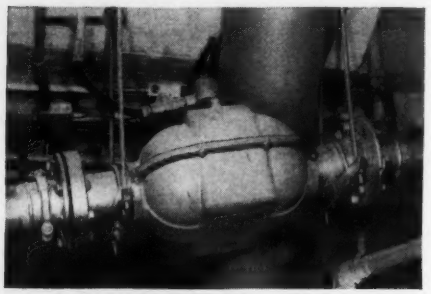
Starch slurry measuring tanks for corn syrup production had to be replaced at the Corn Products Department, Anheuser-Busch Inc., St. Louis, Missouri. Wanted was a more automatic system that could meter slurry direct from storage to starch converter — eliminate visual tank-measuring techniques.

Foxboro Magnetic Flow Meters proved the perfect answer, and at an installed cost considerably below that estimated for replacing tanks. Starch slurry, with 43.5% solids, flows right through the meter because this unique Foxboro instrument has *no* flow restrictions. Measurement is made by electrodes flush-mounted in meter wall — recording by a remote Dynalog* Electronic recorder.

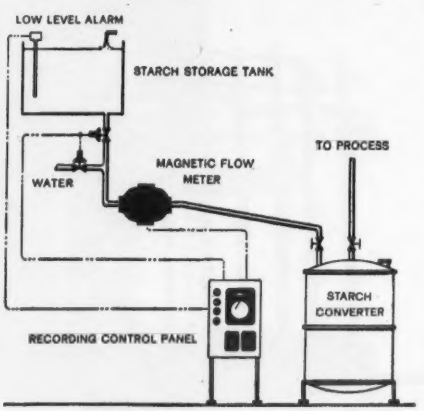
Anheuser-Busch engineers credit their Magnetic Meters with better than ±½% accuracy, consistent repeatability. They also report the meters are unaffected by changes in slurry density, temperature, pressure, viscosity, or chemical composition.

For liquids as viscous as starch slurry, or as free-flowing as water, Foxboro Magnetic Flow Meters have a proven record of accurate, trouble-free performance. Get the complete story in Bulletin 20-14C. **The Foxboro Company, 922 Neponset Ave., Foxboro, Mass.**

*Reg. U.S. Pat. Off.



Foxboro Magnetic Flow Meter (above) is one of two installed by Anheuser-Busch to replace batch measuring tank system. Meters provide measurement of starch slurry with better than ±½% accuracy. Diagram for one of the systems is shown below.



FOXBORO
REG. U.S. PAT. OFF.
MAGNETIC FLOW METERS

6221 on Reader Service Slip

Discusses advantages of infrared heating in food processing

An 8-page, file-size booklet, covering infrared (radiant) heating and its current use in food processing is now available.

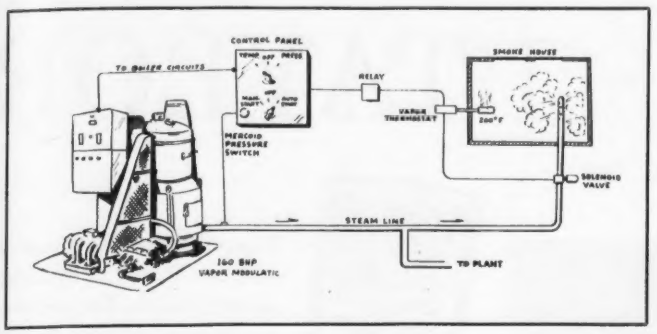
Booklet outlines the growing use of electric infrared in production cooking, drying and baking operations. Characteristics of the various infrared heating elements used in equipment are discussed.

On the job examples of the applications of infrared are pictured and described for several food processing industries.

Also included is a discussion of the importance of evaluating various infrared sources in relation to the cost factor.

("Facts About Modern Infrared and Its Advantages to Food Processors", Form 58-121, is available from The Fostoria Pressed Steel Corp., Fostoria, Ohio.)

For your copy simply circle 6223 on Reader Service Slip.



Schematic diagram shows how system to prevent smoke house fires operates. Two three-way switches are shown on the control panel. The first switch is for automatic or manual start of the boiler. The other switch controls boiler on either a pressure or temperature basis.

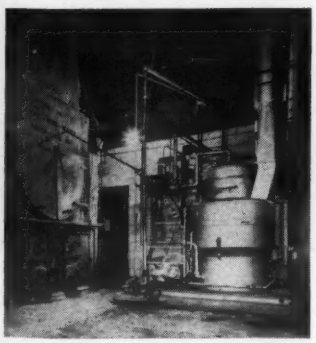
During daytime operation, controls are set on "pressure" and "manual start". Steam needed in the plant for processing is maintained at proper pressure by the boiler. A thermostat in the smoke house has a 200°F contact. If sawdust starts to smolder and the temperature goes above 200°F, a solenoid valve in the steam line opens and steam enters the smoke house to smother the fire.

Controls for night operation are set on "temperature" and "automatic start". If the temperature in the smoke house rises above 200°F, relay starts automatic boiler operation

Package boiler, at full steam in 2 minutes, made part of fire protection system

Eliminates watchman on graveyard shift

Also supplies steam for processing as well as plant's heating system



New package boiler is at right in above view of boiler room at Routh Packing Co. The hand-fed boiler at left, has been torn down, releasing 250 square feet of floor space which is now used as a truck maintenance area

A package boiler at the J. H. Routh Packing Co., Sandusky, Ohio, serves a two-fold purpose.

Steam used for processing operations and the plant's heating system is also used to smother fires in the company's two smoke houses.

The smoke houses use gas burners to pre-cook Daisyfield Hams. Smoke from hardwood sawdust is blown into the two rooms which operate from 11 at night until five in the morning.

During these hours, no one is around to sound an alarm or fight a fire should one break out.

(*Continued on next page*)

NOW!

LOWEST-COST ABBE!

Just Load-Light-Look . . . get top accuracy readings in seconds!

Dependable quality control is high-speed routine with a B&L Abbe-3L Refractometer . . . and the price is the lowest in the field. You can easily test several samples a minute. Horizontal prism assembly is right up front, loads or wipes in a wink. Duo-Speed control gives you rapid scanning or fine line setting at the touch of a finger. Precision scale reads instantly to .0005; reliable estimates to .0001. Practical range: n_D 1.30 to n_D 1.71. (NEW! High Range Abbe-3L, n_D 1.45 to n_D 1.84 range, for high-index liquids. Write for quotation.)

LOAD! Front horizontal prisms for easiest loading ever.

LIGHT! Comfortably low-positioned hold-down switch lights scale.

LOOK! See accurate reading instantly on illuminated scale.

ONLY $745 COMPLETE

BAUSCH & LOMB OPTICAL CO.
60638 St. Paul Street, Rochester 2, N. Y.

Send me complete data on the following B&L Refractometers:

☐ Abbe-3L ☐ Industrial ☐ Hand
☐ High Range Abbe-3L ☐ Butyro ☐ Juice
☐ Precision ☐ Oil Grading ☐ Dipping
☐ I'd like a demonstration of the models checked above.

NAME, TITLE .....
COMPANY .....
ADDRESS .....
.....

MAIL COUPON FOR DATA AND ON-THE-JOB DEMONSTRATION OF INDUSTRY'S MOST COMPLETE LINE.

6224 on Reader Service Slip

(*Continued from preceding page*)

Therefore, a fire protection system has been installed so that if a fire should start in the smoke houses, a thermostatic control, set at 200°F, opens a steam line leading into the areas. (See diagram)

Thus, steam at 100 pounds pressure is forced into the rooms, smothering the fire.

In the event that the boiler is shut down, and there is no steam in the line, the boiler will start automatically.

Pressure is up from a cold start within two minutes from the time the thermostat detects excessive heat, and steam is then blown into the steam rooms.

More processing steam

The automatic boiler was secured by Routh because of their need for more steam to conduct processing operations.

Previous to the package boiler installation, they had used two fire-tube boilers. One of these had to be shut down for one week out of every 1½ months for repairs.

This boiler downtime reduced production of shortening to about 210,000 pounds every two months rather than the 240,000 pounds required.

To make up this loss and maintain necessary production, overtime payments were running as high as 25 per cent of the total cost of the shortening operation.

Cuts overtime

The compact boiler, however, has restored production levels and eliminated overtime.

Furthermore, because boiler only takes two minutes to get pressure up to operating level, labor required for early start-up time has been cut by 20 per cent.

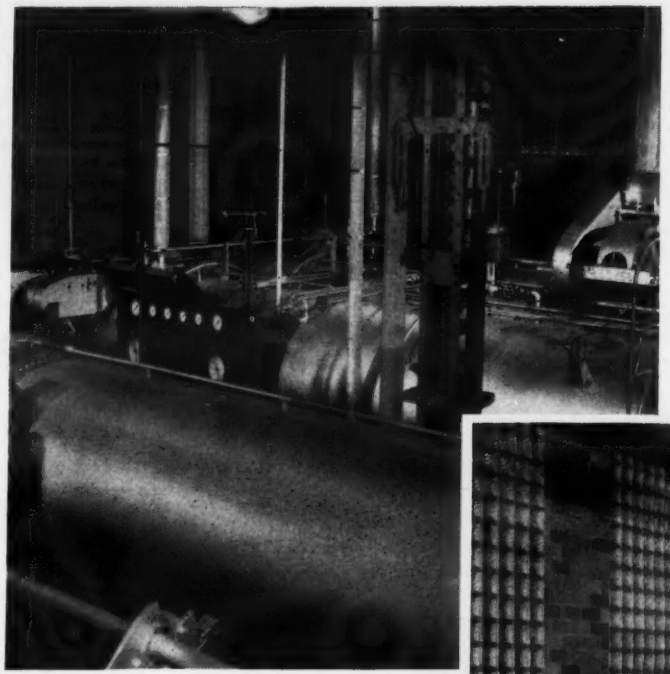
(Package boiler and thermostatic detection system (Vapor Modulatic Boiler and Vapor Thermostat) used at the J. H. Routh Packing Co., was provided by Vapor Heating Corp., 80 E. Jackson Blvd., Chicago 4, Illinois.)

For more information circle 6225 on Reader Service Slip.

American Home Foods TAYLOR

Throughout the plant at Milton, Penn., American Home Foods, Division of American Home Products Corp., relies on Taylor instruments to protect its fine quality reputation.

High grade products marketed under the CHEF BOY-AR-DEE label include Ravioli, Spaghetti and Meat Balls, Beefaroni, Spaghetti Dinners, Pizza, La-



Shown above are a few of several Taylor Controlled Food Machinery and Chemical Corporation's continuous Sterilmatic cooker and cooler lines. With this modern continuous sterilization method, precise temperature control is all important and consistently maintained by Taylor FULSCOPE* Controllers.

At right—some of the scores of Taylor controlled retorts. Well over 150 controllers are involved in the completely automatic steam cook system, processing tin containers for various tomato products.

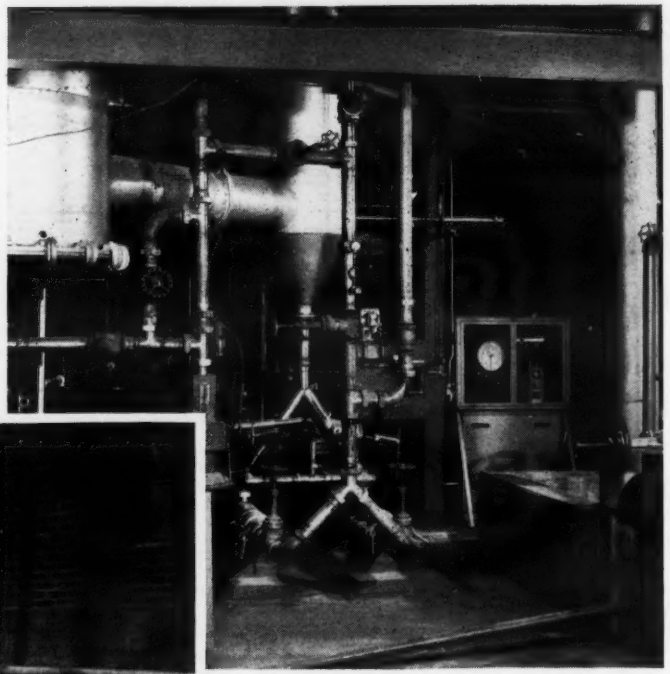
SEE US AT THE

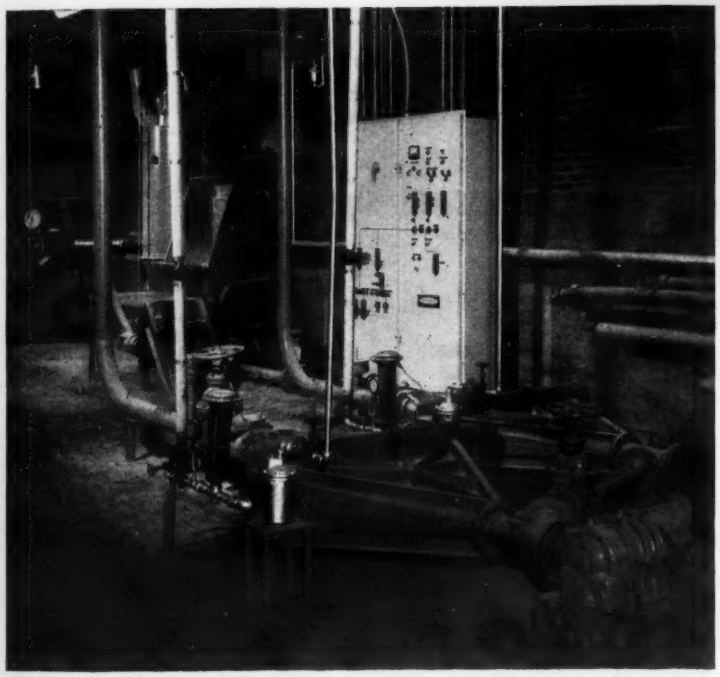
Taylor Instruments

assures top quality with CONTROLS

sagna, Meat Balls and Gravy, Sauce and Meat Balls, Spaghetti Sauce, and Mushrooms and Brown Gravy.

The name Taylor has meant dependability in the canning industry for many years . . . and those years of experience in solving all kinds of processing control problems can be invaluable to you. Just call your Taylor Field Engineer, or write for **Catalog 500.** Taylor Instrument Companies, Rochester, N. Y., or Toronto, Ontario.





Photograph above shows a Buflovak Evaporator, used on tomato puree and paste required by American Home Foods' wide variety of products. Taylor controls insure a completely uniform product with maximum efficiency.

At left—the flour conveying system. Taylor TRANSAIRE* Temperature Transmitters and FULSCOPE Receiving Controller regulate flour temperature before it is mixed for various spaghetti and macaroni products and pizza.

*Reg. U.S. Pat. Off.

CANNERS SHOW

MEAN ACCURACY FIRST

3226 on Reader Service Slip

Push-button flow control from any part of plant offered with . . .

Automatic CIP Valves

The introduction of automatic CIP valves at the recent dairy show makes completely automated installations in sanitary lines practical for food processing operations.

Such application may be as in recirculation for in-place cleaning — or in a single operation as on a filling machine.

Valves may be used for flow control of liquids such as dairy products, baby foods, soups, catsup, vinegar, mayonnaise, soft drinks, wine, beer, fruit juices, liquid sugar, etc.

Operating on air pressure, the valve may be turned on or off from any part of a processing plant, either by push-button or as part of a pre-set automatic cycle.

A visual signal of each valve's position may also be provided to permit full control of an entire liquid transfer system from any point, no matter how remote from actual pipe location.

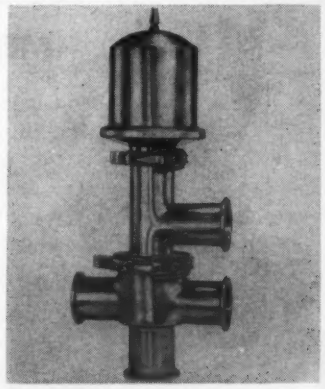
Of sanitary design, valve is constructed of stainless steel and has seat flush with outside ports.

It is available in either direct or reverse acting styles in both single and double position.

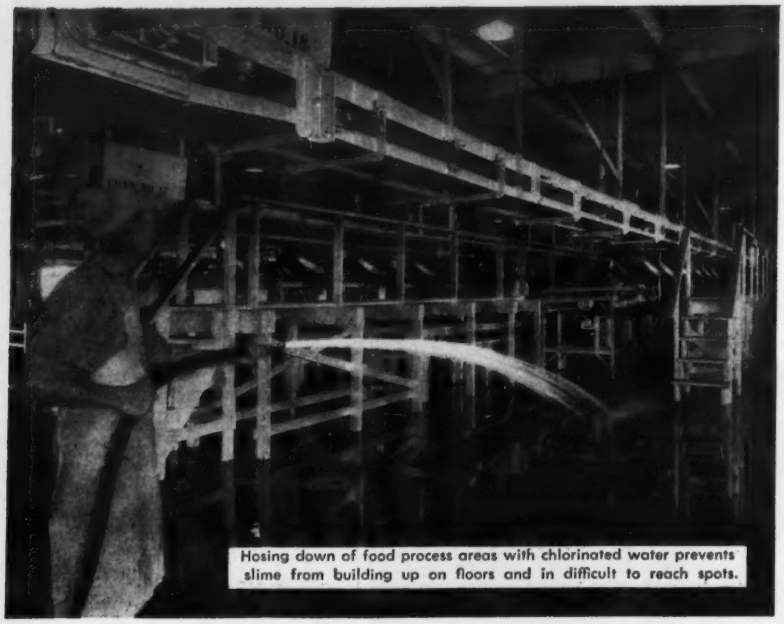
In a direct acting valve, application of air closes the valve, while release of air pressure opens it.

A reverse acting valve, on the other hand, remains closed

(*Continued on page 94*)



Typical of automatic CIP valves is this 3-way unit from Tri-Clover Division of the Ladish Co.



Hosing down of food process areas with chlorinated water prevents slime from building up on floors and in difficult to reach spots.

HOW W&T IN-PLANT CHLORINATION

cuts clean-up time and keeps plant cleaner

At a large eastern quick-freezing plant, slime accumulation on processing floors was a problem. It was necessary to halt production runs frequently for clean-ups.

Wallace and Tiernan Chlorinators were installed on the plant water system and all water in the plant is now chlorinated. Besides eliminating slime on processing floors and equipment, In-Plant Chlorination helps to maintain a higher level of plant sanitation with greater ease. Clean-up times have been reduced as much as 50%. Floors are no longer slippery from slime and accidents from this source have been virtually eliminated.

For information about W&T In-Plant Chlorination send for Bulletin #I-58.38.

WALLACE & TIERNAN INCORPORATED

25 MAIN STREET, BELLEVILLE 9, NEW JERSEY

MERCHEN GRAVIMETRIC FEEDERS & METERS

for dry free-flowing materials

- automatic batch control
- continuous blending
- materials accounting

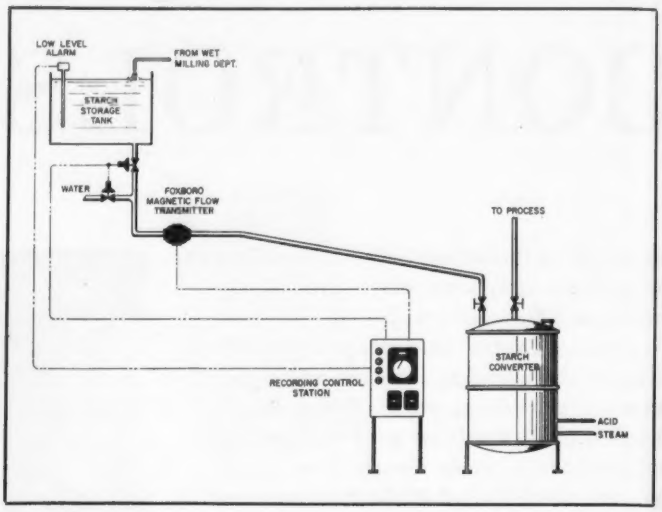
Accuracy 1%
Rates 3 to 3000 lbs. per min.

Write for Bulletin No. M-32. 38

M-32-38

WALLACE & TIERNAN INCORPORATED
25 MAIN ST., BELLEVILLE 9, N. J.

6227 on Reader Service Slip



Schematic diagram shows single metering system, consisting of a magnetic flow meter (flow transmitter) and a recording and integrating controller. Anheuser-Busch uses two such systems in their Corn Products Department

Sanitary, magnetic flow meter provides accurate flow measurement regardless of viscosity, temperature or pressure of liquid being measured

Cuts metering system costs 20%

DONALD P. WALK
Chemical Engineer
Corn Products Department
Anheuser-Busch, Inc.

When several measuring tanks had to be replaced in our process for converting corn starch to corn sirup, we wanted a metering system which would feed an exact amount of starch slurry directly to the converters.

Thus, we could avoid the cost of new metering tanks and, at the same time, make batch loadings virtually automatic.

Conventional differential pressure type meters offered no solution.

We finally decided upon a magnetic flow meter which has no restrictions of any kind.

Meter measures total flow regardless of changes in density, temperature, pressure, viscosity or chemical composition of the liquid measured.

It is unaffected by vibration. Since turbulence of liquid has no affect, straight runs of meter piping are not required.

The metering system consists of a magnetic flow meter and a recording and integrating controller.

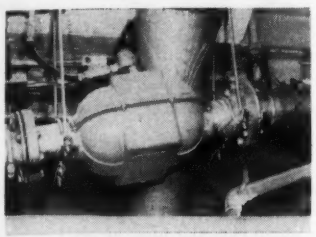
The magnetic flow meter is installed in the line from the storage tank to the converter, replacing the slurry measuring tank.

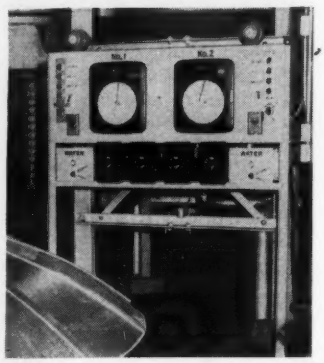
Liquid starch flows through a straight, non-magnetic tube in the meter. This tube has an electrically insulated liner with two electrodes mounted flush with the inner wall and

an electromagnet outside.

Operation is based upon Faraday's law of electromagnetic induction. Thus, the flow of the conductive liquid through the magnetic field generates a voltage which is sensed by the electrodes and conducted to the receiver.

As indicated with the starch slurry, meter provides accurate measurement even with liquids which have very low conductivity.





Close-up view of transmitter and electronic receivers which make up metering system

Therefore, meter will measure flow of almost all liquids in the food field.

In the system a pre-set amount of starch slurry passes through meter. Controller then closes a valve in slurry line, simultaneously opening a water valve at the tank.

A pre-set water flow flushes the line from tank to converter, avoiding possibility of a choked starch line.

Since water is normally added to the batch, the flushing water is allowed to enter the converter.

When flushing is complete, the water valve automatically closes. Slope of starch line provides excellent drainage

(*Continued on next page*)

Simplicity in steam traps can effect big savings in parts inventory and maintenance time

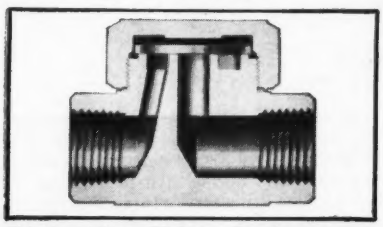
by John W. Ritter, Test Engineer
SARCO Company, Inc.

The function of all steam traps is to release condensate and prevent steam loss. However, the method of trapping can make a great difference in cost and effectiveness.

In the Sarco Thermo-Dynamic Steam Trap, the method is fundamental. Air or condensate entering the trap must flow from the inlet tube, radially across the underside of the disc valve, to the outlet. The space between the inlet tube and the disc forms a nozzle in which the static pressure energy of the incoming fluid is partly changed to velocity across the underside of the disc, with a resultant *decrease* in pressure. (This will be recognized, of course, as the Bernoulli Principle.) Use of this fundamental method means reliability in operation.

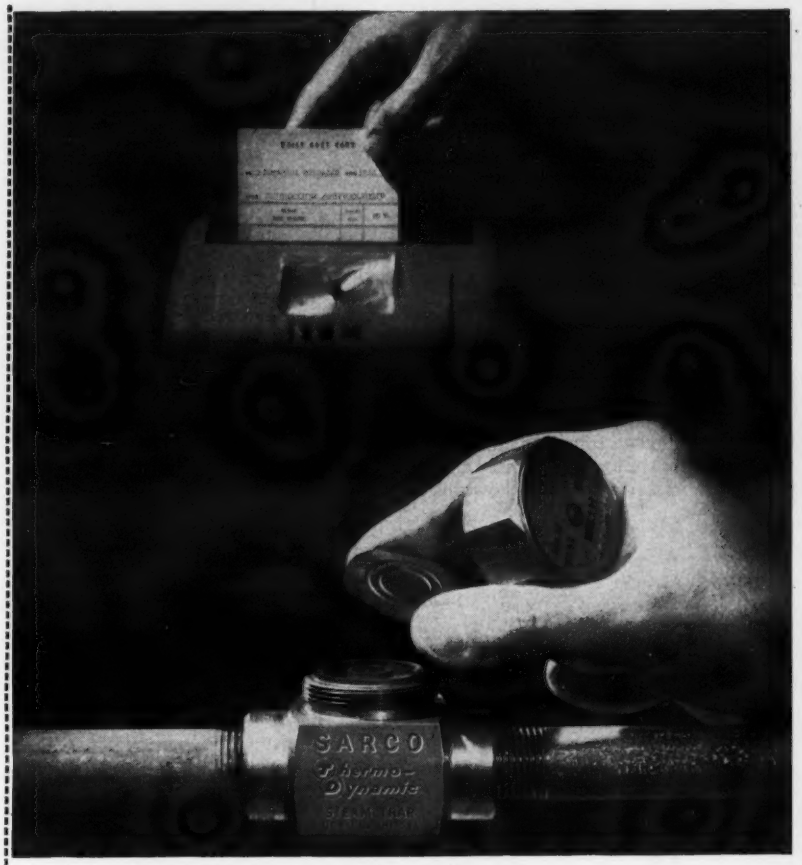
As the high velocity fluid jet strikes the side of the upper chamber, some recompression takes place, so that the pressure above the disc becomes greater than the pressure below it. The pressure reduction under the disc and the pressure recovery above it depend on the internal energy of the fluid. As the condensate above nearly approaches steam temperature, its internal energy is enough to overcome the upward force at the inlet tube and the disc snaps down in the inlet tube, which is the inlet valve seat.

Simultaneously, the disc also seals the outer ring, which isolates the space above the disc from the outlet. The disc valve is therefore held firmly against the inlet valve seat until the pressure in the control chamber is reduced by condensation. The upward force then exceeds the downward force and the disc valve opens.



This 3-part Sarco TD Steam Trap has only one moving part—the hardened, polished stainless steel disc.

No other trap uses the velocity of the fluid to operate the valve or uses the recompression of the flowing fluid to trap the valve closed and to hold it closed. When it closes, it closes tightly – no "operating steam" leaks out.



40 seconds inspection time— that's all it takes for a SARCO TD Steam Trap

Just back off the cap of a Sarco TD. Lift out its single moving part, the stainless steel disc. Wipe it off, and drop it back. No adjustment is ever required, at any load or any pressure in its range – from 10 through 600 psi.

The TD operates in any position, won't blow steam at any load. Small as a tee fitting, it can be installed in tight places. Its versatility and reliability cut cost of big replacement inventory.

Write for "Literature Kit 2A" today and get latest bulletins on the TD Steam Trap and other Sarco steam traps. Remember that Sarco can give you impartial advice on *Production Planned steam trapping* because . . .

5605-B

SARCO
COMPANY, INC.
635 Madison Ave., New York 22, N. Y.

Only Sarco makes all 5 types:
Thermostatic • Liquid Expansion • Float Thermostatic
Thermo-Dynamic • Bucket

STEAM TRAPS • TEMPERATURE CONTROLLERS • STRAINERS • HEATING SPECIALTIES

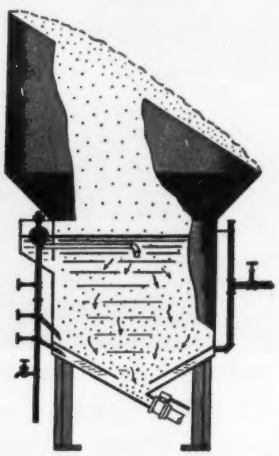
6228 on Reader Service Slip

Using Salt Efficiently

by INTERNATIONAL SALT COMPANY, INC.

Fully Saturated Brine When You Want It, Where You Want It—Automatically

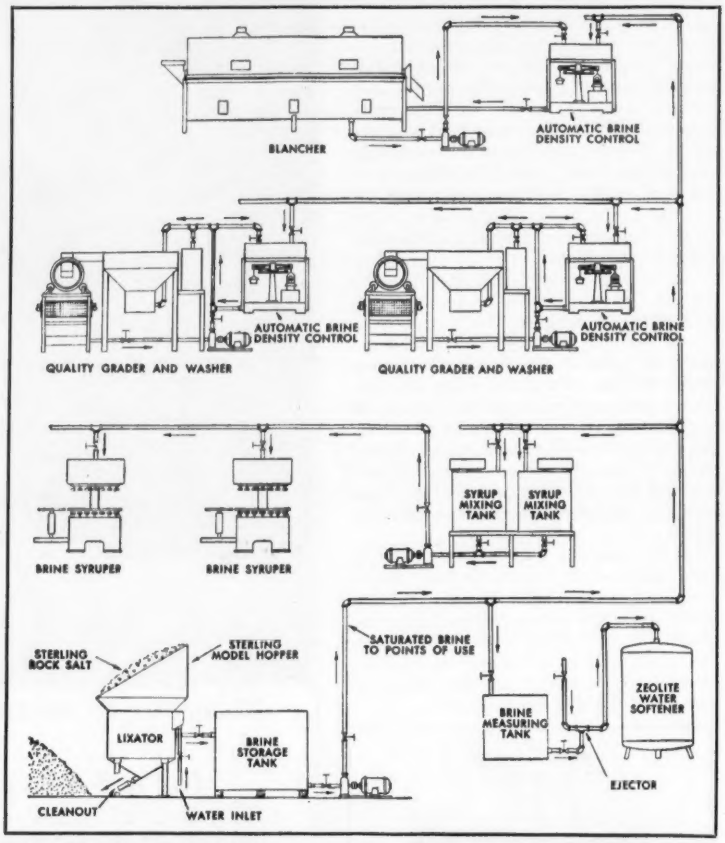
Today, this is possible in any plant with a Sterling Lixator and a brine piping system. Just open a valve at any point where you want clear, fully saturated brine. You'll get it instantly. And the exact amount you draw off will be replaced—automatically—by the Sterling Lixator. Handling of dry salt within the plant is eliminated. Salt delivery and salt storage are simplified. The entire brine making and brine distributing operation is centralized and streamlined. Diagram at right shows how this works.



This is the Sterling Model Lixator, today's most widely used rock salt dissolver. In the Lixator, rock salt is dissolved automatically, and brine is self-filtered for maximum purity and clarity.

The Lixator can be located at a point most convenient for salt delivery. Wherever brine is needed in the plant, *pipes* get it there quickly and economically. There's no expense for moving dry salt around. Important plant operations aren't disrupted, either.

In addition to the Sterling Model Lixator, International Salt Company supplies designs for the larger Sterling *Storage* Lixator and the space-saving Sterling *Silo* Lixator, which can be located outside plant buildings. For information on how your plant can save money with one of the Sterling Lixators, contact the nearest International Salt Company sales office. Or write to us direct. You can also get a free copy of "Brine for Today's Industry"—which fully describes the Lixate Process.



FLOW DIAGRAM illustrates the important, multiple uses of Lixate Brine in food processing. The high purity of Lixate Brine makes it ideal for washing and preserving fruits, vegetables and fish before they are packed and during their preparation. Its known density (*always* 100% saturated) makes Lixate Brine perfect for quality grading of peas, lima beans, grains and nuts by gravity "flotation." Lixate Brine is also used extensively in salt/sugar syrups, and for water-softener regeneration.

International Salt Company, Inc., Scranton 2, Pa. • Sales Offices:

Atlanta, Ga.	Chicago, Ill.	Memphis, Tenn.	Philadelphia, Pa.
Baltimore, Md.	Cincinnati, O.	Newark, N. J.	Pittsburgh, Pa.
Boston, Mass.	Cleveland, O.	New Orleans, La.	Richmond, Va.
Buffalo, N. Y.	Detroit, Mich.	New York, N. Y.	St. Louis, Mo.

Service and research are the extras in

STERLING SALT

INTERNATIONAL SALT COMPANY, INC.

6229 on Reader Service Slip

(*Continued from preceding page*)

and flushing action.

Because accuracy of starch slurry volume delivered to converters by the meter is consistent, we are able to produce corn sirup of identical quality conversion after conversion.

Cost and installation of metering system was 20 per cent less than replacing our old measuring tanks with stainless steel vessels.

(Metering system installed at Anheuser Busch is a product of The Foxboro Co., Foxboro, Massachusetts.)

For more information circle 6230 on Reader Service Slip.

✦

(*Continued from page* 91)

until application of air opens it. Release of air returns valve to closed position.

A major story on the actual installation of a system incorporating remote control CIP valves, with automatic cleaning, will appear in the March issue of FP.

Automatic CIP valves are available from:

(Cherry-Burrell Corp., 2400-6th St., S.W., Cedar Rapids, Iowa.)

For more information circle 6231 on Reader Service Slip.

(The Creamery Package Mfg. Co., 1243 W. Washington Blvd., Chicago 7, Ill.)

For more information circle 6232 on Reader Service Slip.

(Food Equipment & Specialties Co., 1415 Lake Ave., Wilmette, Ill.)

For more information circle 6233 on Reader Service Slip.

(G and H Products Corp., 5718 Fifty-Second St., Kenosha, Wis.)

For more information circle 6234 on Reader Service Slip.

(Ladish Co., Tri-Clover Div., Kenosha, Wis.)

For more information circle 6235 on Reader Service Slip.

(Taylor Instrument Companies, 95 Ames St., Rochester 1, New York.)

For more information circle 6236 on Reader Service Slip.

Operator uses light box apparatus to examine cream-style corn for extraneous materials

Permits Inexpensive Examination of Food Samples

A simple, inexpensive device called the light box, may be used for critical examination of foods to detect extraneous materials and for color comparison of foods by transmitted light.

The device and examination technique may be applied to any product which shows gravity flow.

In its simplest form, the equipment consists of a rectangular box on which a pyrex tray is placed in a positioning rack over a light source.

Interposed between the light source and sample tray is a ground glass plate which gives uniform diffused lighting of sample material.

A rheostat is connected to the light source so that intensity of light may be varied.

Two adjustable legs are mounted under the end of the box that is farthest away from the user. These permit control of product flow in the tray.

In actual use, food sample is put into pyrex tray which is then placed into positioning rack on top of the light box. Sample end of the tray is placed farthest away from the analyst.

Light box legs are then ad-

(*Continued on next page*)

Even on "difficult" filtrations, there's a Dicalite Filteraid to give desired Clarity, fast Flowrate and operating Economy—all at once! For Dicalite provides a complete range of filteraid grades... and we do mean 'complete.' 10 standard grades, widely used throughout industry. If your problem is particularly difficult, there are a score or more of special Dicalite grades. And, if nothing else will serve, we can probably custom-tailor one for your individual requirements.

But, ninety-nine times out of a hundred, your filtration can be handled by correct selection and proper dosage of one of Dicalite's standard grades. And once you have established the best procedure for your processing you can depend upon it... Dicalite Filteraids are famous for their unvarying uniformity and quality, lot after lot.

If you have questions on filtration, why not check with your Dicalite service engineer? His counsel does not obligate you in any way, and his goal is the same as yours—to obtain for you required clarity at maximum throughput with minimum filteraid dosage. Call him, or write us—today.

Among the DIATOMS shown here:

SYNEDRA • NAVICULA • CYMBELLA
SURIRELLA • COSCINODISCUS
ACTINOPTYCHUS • EPITHEMIA
EUNOTIA

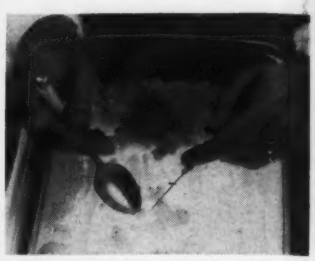
Dependable GLC GREAT LAKES Dicalite® DIATOMACEOUS MATERIALS

DICALITE DEPARTMENT, *Great Lakes Carbon Corporation, 612 So. Flower St., Los Angeles 17, Calif.*

6237 on Reader Service Slip

(*Continued from preceding page*)

justed so there is a gradual product flow from the high end of the tray to the low end nearest the analyst.



By means of a spoon, as shown in closeup view, each kernel of corn is separated from surrounding product and moved about to examine all sides of the kernel

By means of a spoon or spatula, a teasing, rolling, spreading method of inspection is carried on until entire sample has been thoroughly examined for extraneous materials.

Examination of a 15 fluid ounce sample may be accomplished in only 5 to 10 minutes.

(Full details on the light box method for critical examination of food samples may be obtained from the Research & Technical Department, American Can Co., Maywood, Ill.)

For more information circle 6239 on Reader Service Slip.

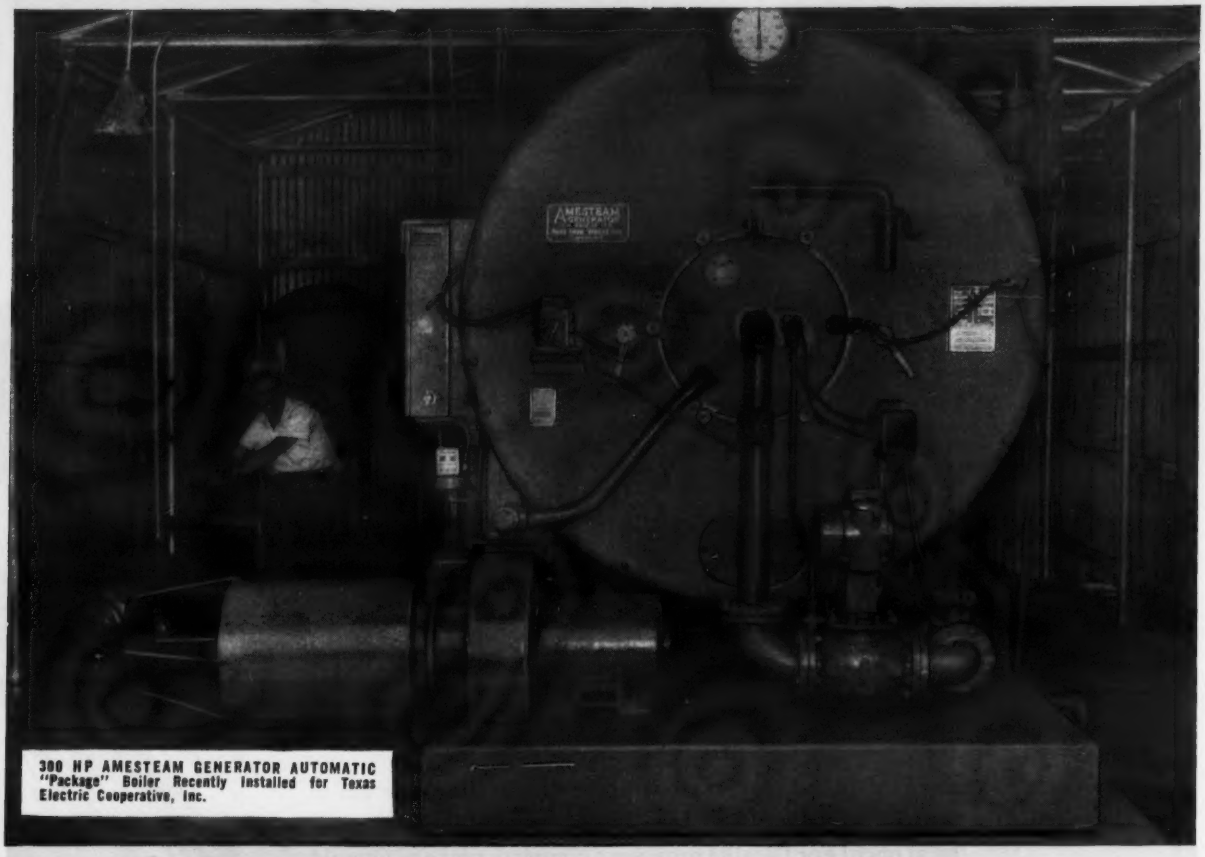
Starch testing instrument offers greater flexibility

Five accessories available on starch testing instrument, to offer greater flexibility, are described in a 2-page bulletin.

Accessories include solenoid-controlled cooling coil, zero suppression attachment, interchangeable sensitivity cartridges, water-cooled stainless steel sample bowl cover and stepless variable speed control.

(Bulletin, "The C. W. Brabender Visco Amylo Graph", is available from C. W. Brabender Instruments, Inc., 50 E. Wesley St., South Hackensack, New Jersey.)

For your copy simply circle 6240 on Reader Service Slip.



300 HP AMESTEAM GENERATOR AUTOMATIC "Package" Boiler Recently Installed for Texas Electric Cooperative, Inc.

TEXAS ELECTRIC COOPERATIVE, INC.

Cuts Fuel Consumption Over 36%

Saves Over $15,000 per year

...with AMESTEAM GENERATOR

We Quote the Money-Saving Facts:

"We were very pleased when we replaced two gas-fired boilers in our presssure testing plant with one new 300 HP AMESTEAM GENERATOR Automatic "Package" Boiler. The new Ames unit has reduced our fuel costs alone by 38% ...a saving of *$7,800 per year.*

"Because our new AMESTEAM GENERATOR is entirely automatic, three firemen are now transferred to other duties. This results in an additional saving of *$7,200 per year.*

"This total saving of *$15,000 per year* does not include the considerable savings in maintenance costs. On top of this, the new Ames installation increases our production potential by 20% to 30%... with much higher quality steam."

We at Ames continually receive letters like this from the enthusiastic users of AMESTEAM GENERATORS. Ames customers are *satisfied* customers. They know that when they buy AMESTEAM GENERATORS, they buy LOWER-COST STEAM!

What's Your Steam Problem?

If you need 10 to 600 HP and want the kind of space-saving, trouble-free service enjoyed by satisfied users of AMESTEAM GENERATORS, contact your nearby AMESTEAM Dealer or write for our Catalog.

AMES IRON WORKS INC.
BOX Q-29 OSWEGO, N. Y.

AMES IRON WORKS
BOX Q-29, OSWEGO, N. Y.

Gentlemen:
Please send me further information on AMESTEAM GENERATORS and name of nearest representative.

NAME .....
COMPANY .....
ADDRESS .....

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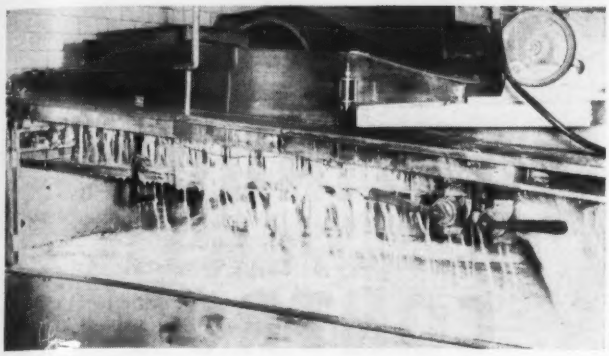
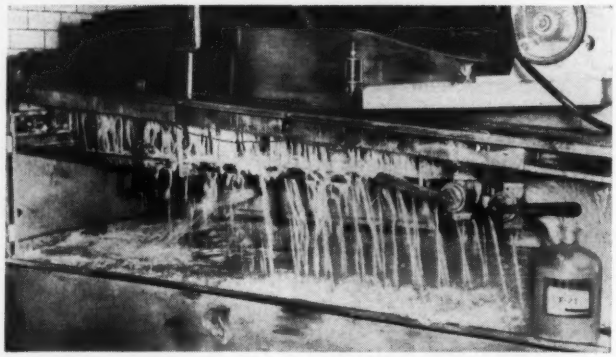


Excessive foam build-up from Salvo potato washer is discharged into sewer where backpressure causes damage

After application of food grade antifoaming agent, potato washer foaming is controlled, permitting peak operations of 12-14 hours per day without exceeding sewer capacity



Foils foam . . .

. . . saves chips

Verified by **CHARLES SEYFERT**
President, Seyfert Foods
Ft. Wayne, Indiana

Problem: Overflow from sliced potato washer carried excessive foam from washing to sewer. Sewer capacity was exceeded when plant, processing potato chips, works 12-14 hours per day during the summer peak.

Back pressure of the foam is damaging plumbing in adjacent building. Potential explosion of entire sewer from foam threatens.

Solution-Results: Application of antifoaming agent using a drip feeder to control foam eliminates back pressure. Feeder is located to work with flow.

Food grade antifoam F-21 is applied at our plant at a rate of 25 ppm, which permits constant operation without loss of production from foaming.

Antifoaming agent is based on edible vegetable oils, bland in odor, pale straw colored, noncorrosive and has been heat treated to eliminate bacteria. It is applied direct without heating at the processing washer.

Hodag F-21 antifoam is a product of the Hodag Chemical Corporation, 7247 N. Central Park, Chicago 45, Ill.

For more information circle 6241 on Reader Service Slip.

Save time! Save money!

Repair **corroded concrete with**

Penntrowel

Surfacing Compounds

Badly corroded concrete and cement surfaces in your plant don't *have* to cost you long shut-downs and expensive contracting jobs. You can *repair* those damaged areas with new PENNTROWEL Surfacing Compounds.

PENNTROWEL is tough. Its impermeable, corrosion-resistant coating turns away acids, alkalis, solvents . . . gives long service . . . doesn't crack or slough off.

PENNTROWEL is easy to use. You mix it right at jobsite, then just trowel it on . . . need no expensive equipment to mix and apply.

PENNTROWEL cures fast. Apply in afternoon, use surface next day!

PENNTROWEL is economical. Materials and surface preparation costs are amazingly low. And PENNTROWEL reduces future maintenance costs.

PENNTROWEL is available in three specialized grades . . . for corrosion protection, fluorine service and heavy wear. Write for descriptive folder and installation cost data.

Ask for a Demonstration **We'll be glad to demonstrate PENNTROWEL's remarkable abilities to you right in your plant. Call or write today to arrange a test.**

Pennsalt Chemicals
ESTABLISHED 1850

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PENNSALT CHEMICALS CORPORATION
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Penntrowel is a trade-mark of Pennsalt Chemicals Corp.

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Virtually

UNLIMITED USE

in Processing Foods and Chemicals

The New

CogMill

is being used to process cheese, spices, dough, crackermeal, horseradish, peanuts, dehydrated beef, chicken bones and even metallic oxides.

CHOPS • GRINDS
GRANULATES • PULVERIZES

almost any solid and blends liquids, or any combination of these materials, to

Any Desired Consistency

ALL Product Contact Areas Stainless Steel

Exclusive snap-apart design permits quick, thorough cleaning.

Models for manual or continuous feeding by 7½ to 20 H.P. motors. Variable speed feed screw with jacketed inlet and outlet for temperature controlled processing.

Send for details, designating product to be processed.

THE COG CORPORATION

Division of Motiograph, Inc. ***Established 1896***

4389 W. Lake Street • Chicago 24, Illinois

A. TORRES EXPORT, INC., 2550 W. Peterson Ave., Chicago 45, U.S.A.

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sanitation

Cleaning advances in the making

Progress in the technology of soil removal is reviewed in 28-page booklet.

Also covered are current developments such as cleaning with silent sound (ultrasonics) and automatic, mechanized cleaning of process equipment.

Fiftieth anniversary issue of the *Oakite News Service* describes the role of the company's expanded research facilities play in solving industry's cleaning problems.

(Booklet is available from the Oakite News Service, 19 Rector St., New York 19, N.Y.)

For your copy simply circle 6096 on Reader Service Slip.

Install Truck Floor in 2 Hrs.

Ready-to-lay panels go right over old flooring

Uses: Pre-fabricated, ready-to-lay floor panels are designed for surfacing old, worn, truck or trailer floors, as well as for use in new construction.

Features-Description: Flooring may be installed in two to three hours without special skill or equipment, right over old flooring.

This feature eliminates time-consuming operation of ripping out base floor before installation.

Flooring will withstand any load that the base floor will take either in a single piece or loaded on fork lift trucks.

Panels are joined together when laying floor so as to eliminate any open seams or joints. Joints may be waterproof and floor may have smooth or non-slip surface.

Flat, level panels, making mat-like surface, permit easy movement of cargo over flooring. Panels may be prafabricated for complete waterproofing for use in reefer floor.

Standard panels come in four foot widths, cut in lengths to fit inside of truck or trailer. They weigh approximately

(*Continued on page* 100)

Jones ZENITH* PRESS

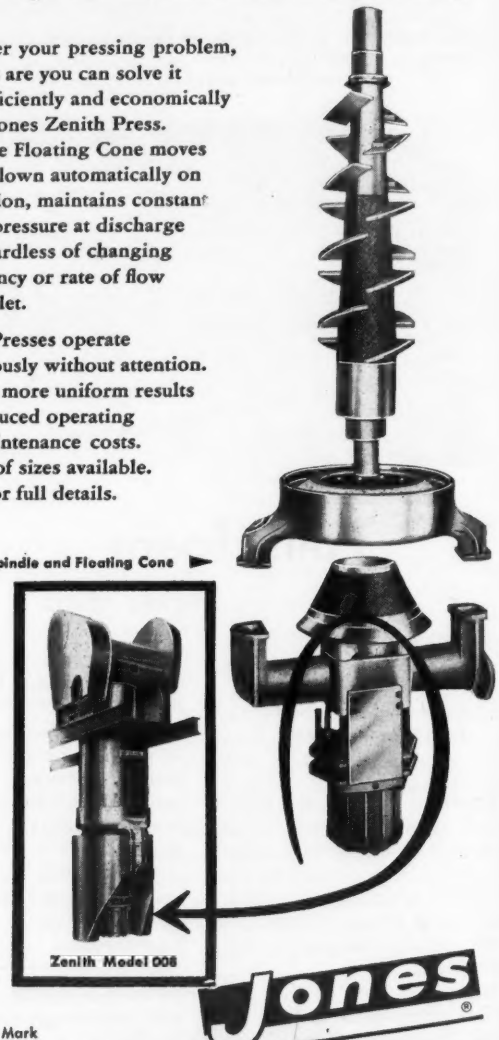
with exclusive floating cone*

GIVES CONTINUOUS AUTOMATIC CONTROL

of liquid or solids recovery

Whatever your pressing problem, chances are you can solve it more efficiently and economically with a Jones Zenith Press. Exclusive Floating Cone moves up and down automatically on air cushion, maintains constant pre-set pressure at discharge end regardless of changing consistency or rate of flow at the inlet.

Zenith Presses operate continuously without attention. You get more uniform results with reduced operating and maintenance costs. Variety of sizes available. Write for full details.



Jones®

*Trade Mark

E. D. JONES CORPORATION

37 Depot Street, Pittsfield, Mass.

Builders of Quality Machinery for Over 100 Years

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Plants, Companies, Personalities

American Molasses Company

announces purchase of Liquid Sugars, Inc., Indianapolis. Leonard C. Lewin will continue as Liquid Sugars general manager.

Minerals & Chemicals Corp. of America

Menlo Park, N.J., announces that James Deshler II has resumed full-time status with the company and has been elected board chairman. Charles A. Specht continues as president and chief executive officer.

Big Stone Canning Co.

Ortonville, Minn., has appointed Loren W. Clark executive vice president.

Borden Chemical Company

is constructing a $1½ million polyvinyl alcohol plant designed to produce five million lb per yr, using new Borden-developed and engineered continuous process. Plant, at Leominster, Mass., is scheduled to go on stream in October 1959.

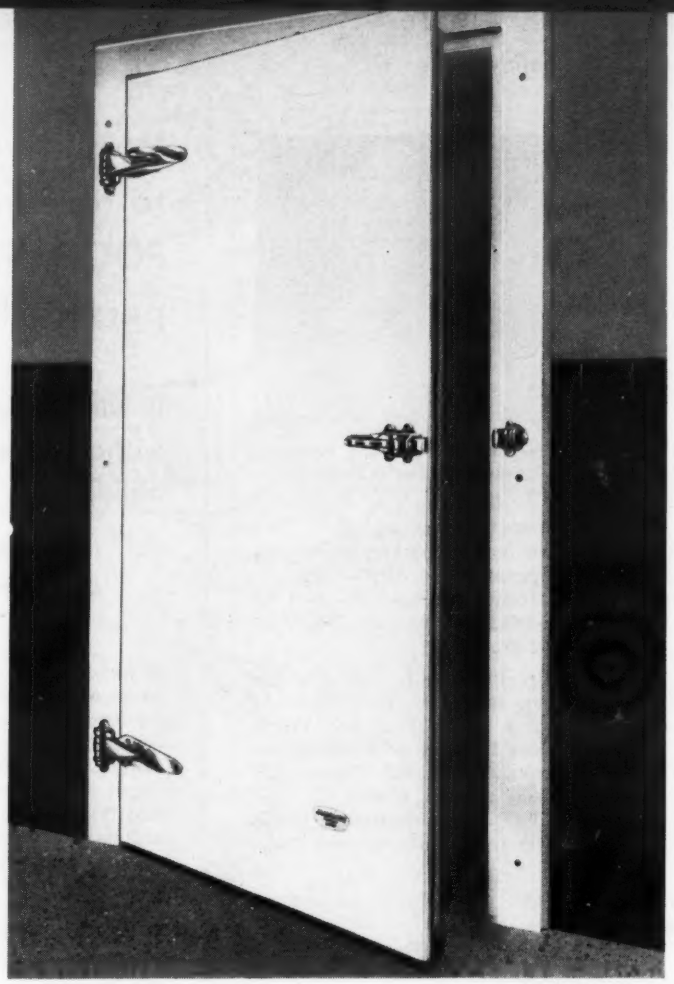
Libby, McNeill & Libby

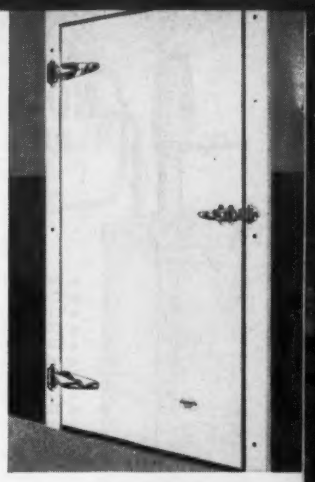
Chicago, announces election of Charles W. Duncan and Robert L. Gibson, Jr., as vice presidents. Duncan will head company's International Division. Gibson succeeds C. B. Weston, retired vice president in charge of the California Fruits Division.

Cook Chocolate Co.

Chicago, has signed a lease for a new plant to be erected for company in Campbellford, Ontario, Canada. Plant will manufacture cocoa and chocolate for the Canadian trade, beginning in mid-1959.

For more information on product at right, circle 6245 see information request blank opposite last page.





FLUSH FITTING

Walk-In Door fits flush with frame for improved appearance, easier cleaning.

LIGHTWEIGHT

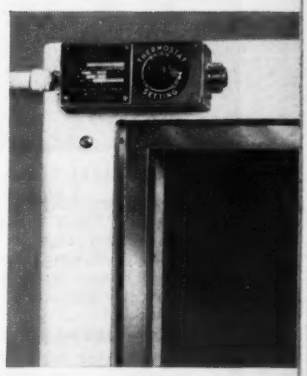
Weighs only ¼ as much as steel clad doors, uses lighter bucks similar to household doors.

Jamison announces JAMOLITE*...
lightweight plastic cold storage doors for food service

FOR THE FIRST TIME—a revolutionary new concept in cold storage door design and construction . . . JAMOLITE Lightweight Plastic Doors now provide better appearance, improved performance and lower cost! Look at these other practical advantages:

- smooth, easy-to-clean surface
- rigid, stable construction
- practically impervious to vapor and moisture
- will not warp
- available in white and other colors
- insulated jamb
- superior insulating efficiency

JAMOLITE Plastic Doors are available as Walk-In, Reach-In, Horizontal Sliding and Vertical Sliding Cold Storage Doors. See how this brand new Jamison development can be used in your installation for replacement or new construction. Write for descriptive bulletin to Jamison Cold Storage Door Co., Hagerstown, Md.

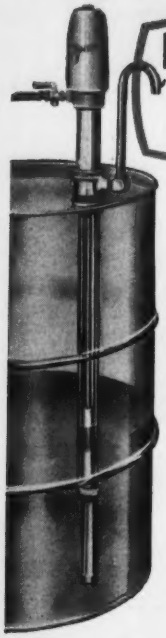


FREEZER DOORS

Jamison FROSTOP is applied to JAMOLITE head, sides and sill to prevent ice formation in freezer use.

*Jamison Trademark

JAMISON
COLD STORAGE DOORS



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Safely move...

- ACETONE
- CATSUP
- CHEMICALS
- CHOCOLATE
- COSMETICS
- DETERGENTS
- DYE STUFF
- FATTY ACIDS
- FREON
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- HAIR TONIC
- HYDROFLUORIC ACID
- INKS
- LACQUERS
- MUSTARD
- PHOSPHORIC ACID
- SHAVE LOTION
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- SOY SAUCE

The new Stainless Steel Fast-Flo Pumps by Graco are now pumping and dispensing these and other corrosive, "handle-with-care" liquids and semi-fluids . . . *quickly, safely* and *direct-from-drum!*

Say goodbye to spillage and waste, eliminate danger of contamination to your expensive liquids and semi-fluids. Investigate this new *Stainless Steel* air-powered Fast-Flo Pump by Graco!

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FACTORY BRANCHES: New York (Long Island City) • Philadelphia • Detroit • Chicago • Atlanta • Houston • San Francisco
SALES OFFICES: Washington • Toronto

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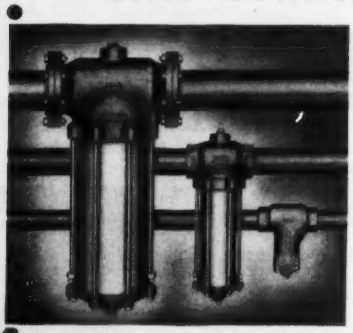
LINE STRAINERS

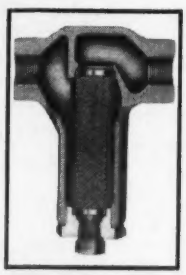


for **SPRAY NOZZLE** SYSTEMS and RELATED APPLICATIONS

in stainless steel, cast iron and brass

A complete range of capacities in ¼" to 4" female pipe connection sizes . . . and in 3" to 6" flange connection sizes. Keeps lines clear for efficient operation. Easily flushed.

TOP PERFORMANCE DESIGN
Screen area so large that strainers will take 75% blocking with less than ½ lb. pressure drop under normal flow conditions. Top and bottom flange collars on screen give seal fit and rigidity.



SPRAYING SYSTEMS CO.
3213 Randolph Street
Bellwood, Illinois

WRITE FOR your free copy of BULLETIN 94 ...gives complete information

6247 on Reader Service Slip

Pre-fabricated truck flooring panels are easy to maintain

(*Continued from page* 98)
two pounds per sq ft and are approximately 5/16" thick.

They may also be used as flooring for in-plant processing areas.

(Pre-fabricated, ready-to-lay floor panels — Poly-Rock — are a product of the Truck Floor Division of Plant Maintenance, Inc., 623 Green Rd., Cleveland 21, Ohio.)

For more information circle 6248 on Reader Service Slip.

Plastic cold storage door . . .

Maintains insulating value at 75 per cent less weight

A plastic cold storage door is now available which maintains insulating value equal to that of light gauge stainless steel clad doors, yet weighs 75 per cent less.

Costing 20 per cent less than doors of comparable insulating value, door shell is constructed of glass reinforced polyester resin similar to plastic-glass boat hulls and automobile bodies.

Following over two years' work, foamed-in-place polyurethane, a plastic which provides uniform foaming throughout, was developed as insulation to fill shell.

In actual production, a definite weight of foamed reactants are poured into the hollow door through inlet holes. When foam just starts to over-

(*Continued on page* 102)

Would you like to receive FOOD PROCESSING personally?

It will be sent to you without charge or obligation . . .

. . . if you qualify
. . . if you request it

If you are responsible for processing operations in an administrative capacity as plant superintendent, food technologist, chemist, engineer or equivalent responsibility . . . in a plant of substantial operations* where food processing is an important factor . . . FOOD PROCESSING will be sent to you without charge or obligation if you request it. Use form below. In requesting, be sure to answer all questions. If your firm is not rated or listed in standard references, indicate size of the company by capacity, annual sales or number of employees. Unless all information is given, magazine will not be sent.

*"Substantial operations" does not necessarily mean an extremely large plant. But requests for the magazine exceed supply so we must set standards to insure publication being sent where it can be used to best advantage.

FOOD PROCESSING
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CHICAGO 11, ILLINOIS

Please send me FOOD PROCESSING without charge or obligation

Name _____

Title _____

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City _____ Zone _____

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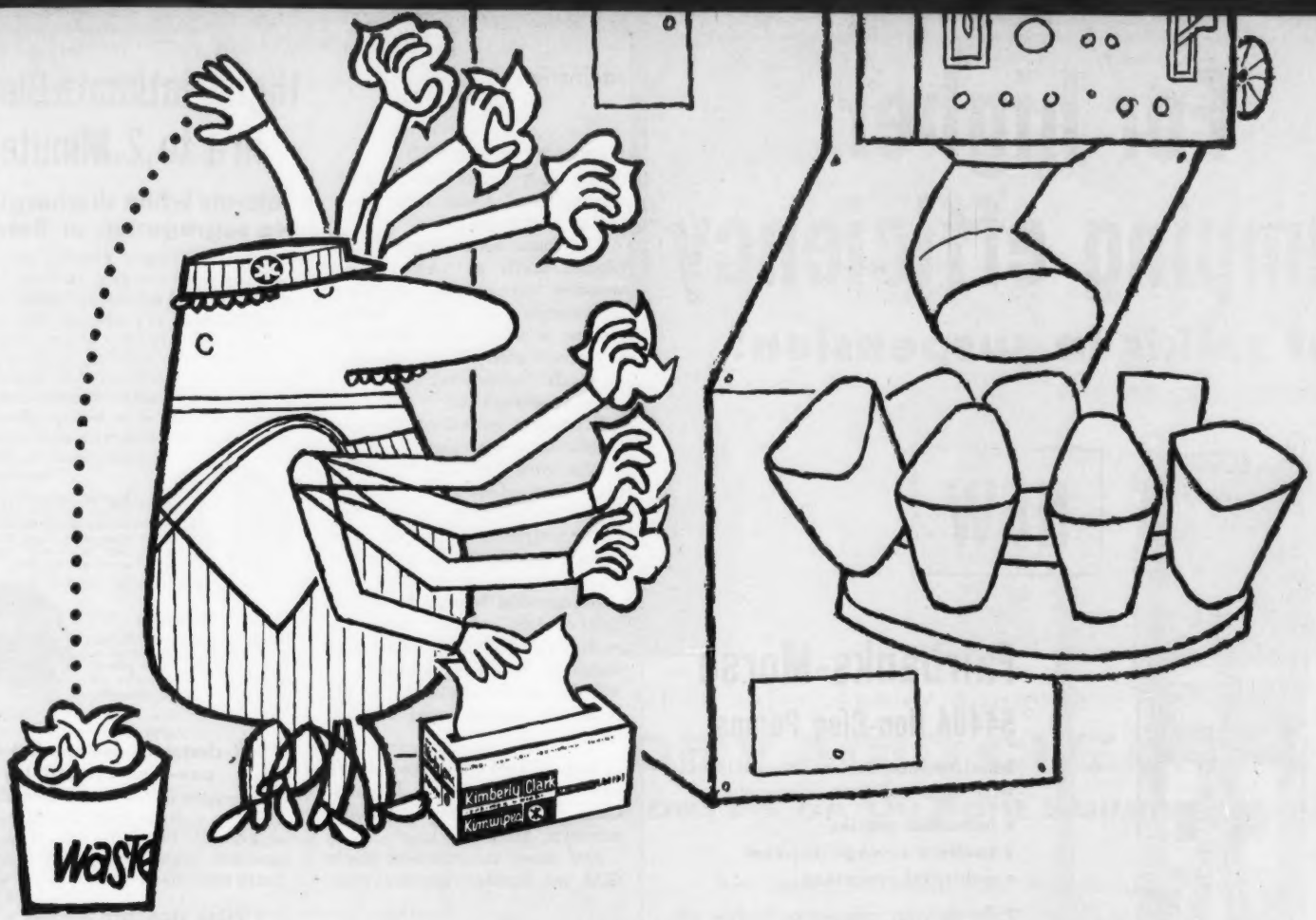
Main Products _____



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Fill in and mail the coupon *today* so that we can rush you your FREE box of 100 Kimwipes! We want you to try Kimwipes in your own plant and discover their superiority over cloth towels in many food processing operations. That's why we're making this Free Offer! You'll find nothing outperforms Kimwipes —nothing is more efficient, handy or economical.

Use them dry for quick, thorough absorption of shortening oils and grease. Use them wet for easy removal of sticky frosting, syrups, sugar and flour from workers' hands or machinery. Use both wet and dry for keeping equipment clean and sanitary. Available in handy pop-up packages or wall dispensers. Super-sanitary Kimwipes pay for themselves in savings on towel laundering, alone!

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Neenah, Wisconsin

Please send me my FREE package of Kimwipes "900-L."

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KIMWIPES INDUSTRIAL WIPERS ARE MADE BY THE MAKERS OF KLEENEX TISSUES, KIMBERLY-CLARK ✱ CORPORATION, NEENAH, WISCONSIN

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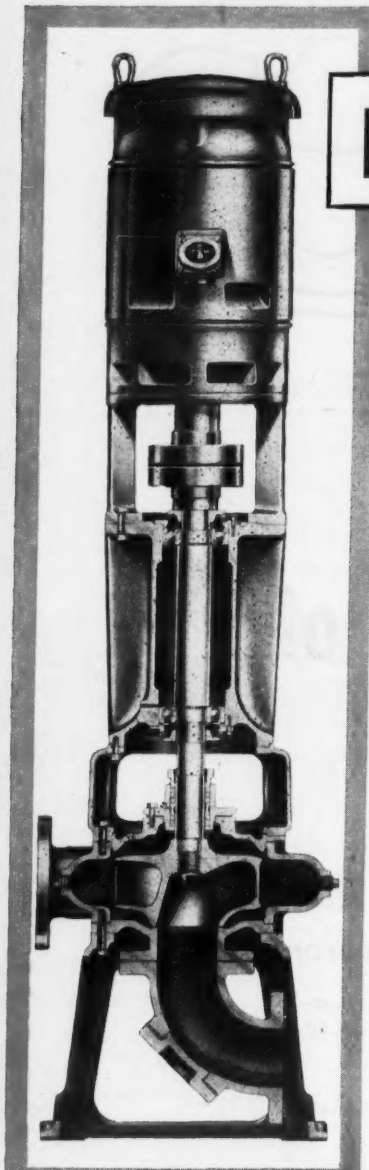
6249 on Reader Service Slip

For higher pumping efficiency

of solids in suspension!



NEW

Fairbanks-Morse

5440A Non-Clog Pumps

Ideal for pumping unscreened liquids with large solids in suspension

- **industrial wastes**
- **sanitary sewage disposal**
- **industrial processes**

Here is your answer to higher efficiencies wherever you are pumping solids in suspension!

All-new Fairbanks-Morse 5440A Non-Clog Pumps feature quick, easy convertibility between any of the many vertical and horizontal types. Power requirements of the pump are always perfectly matched to the electrical and mechanical components. Precision-machined centering fits assure accurate alignment. Exclusive F-M bladeless impeller design minimizes maintenance by preventing clogging from solids and stringy material. The 5440A is only one of many F-M solids-handling pumps designed to meet a broad range of requirements. For information, write Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.

Ask for new 5440A BULLETIN!

FAIRBANKS-MORSE

a name worth remembering when you want the BEST

ELECTRIC MOTORS • DIESEL, DUAL FUEL AND GAS ENGINES • PUMPS
COMPRESSORS • GENERATORS • MAGNETOS • HOME WATER SYSTEMS

6250 on Reader Service Slip

sanitation

(*Continued from page* 100)

flow, inlet holes are sealed, forcing final foam into place under slight pressure.

The foam bonds itself to the plastic walls as well as the wooden cores used as reinforcements at hinge areas. Hence, a structural sandwich is formed with all the inherent strength characteristics of such construction.

Providing excellent thermal insulation properties (K factor in the range of 0.15 at 75°F), this foamed-in-place plastic also adds support to the exterior polyester panel, absorbs shock and dampens vibration and noise.

Impervious to moisture, the light-weight door may be easily cleaned with soap and water or ordinary cleansers. It will be made available in all types of regular cold storage doors.

(Plastic cold storage doors were developed by Jamison Cold Storage Door Co., Hagerstown, Md.)

For more information circle 6251 on Reader Service Slip.

Rubberized abrasive for smooth metal finishing

Catalog lists complete line of rubberized abrasives for deburring, smoothing and polishing metal surfaces, with notes on how to use them. Several industrial assortment kits are listed.

Rubberized abrasive wheels, blocks, sticks, points and cones are shown in wide range of textures and sizes.

(Eight-page catalog No. 228 on rubberized abrasives is issued by Cratex Mfg. Co., 1600 Rollins Rd., Burlingame, Cal.)

For more information circle 6252 on Reader Service Slip.

Additional information quickly! Use the convenient Reader Service Slip, found opposite the back inside cover, to secure additional information for application to your problem.

Highly Intimate Blends in 1 to 2 Minutes

Blends while discharging; No segregation or flotation

Sturtevant Rotary Blenders start 4-way blending while charging, continue it during discharge, thus producing highly intimate, even blends of dry and semi-dry materials – within 3 to 5 minutes of start of charging.

Six *complete* blending cycles per hour are common. And Sturtevant's special action produces no particle reduction, cleavage or attritional heat – is highly effective yet gentle and safe even with explosives.

Receiving

Scoops cascade material as drum rotates. Movement forces material from both ends to middle. Thus blending is 4-way right from start of charging.

Discharging

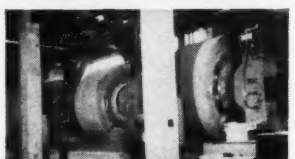
Single gate controls charge, discharge. Blending continues throughout discharge phase. Result is no segregation or flotation — highly intimate, even blends.

Self-cleaning, dust-sealed drum; one-man accessibility

Operation of Sturtevant Blenders is self-cleaning – drum interiors are completely dust-sealed. For inspection of all models, one man simply loosens a few lugs to remove manhole cover – quickly and easily.

Nine standard models with capacities to 900 cu. ft.

10 cu. ft. Sturtevant Stainless Steel Blender at U.S. Steel's Applied Research Laboratories. Corrosion and contamination-proof, this unit handles batches up to 500 lbs. — is ideal for critical work or small runs.



Automatically controlled, three 50 cu. ft. Sturtevants blend chocolate powder and other ingredients for Hershey Chocolate Corp. Operating in a group, each Blender can process more than a ton per batch. Quick accessibility and self-cleaning features keep maintenance to one hour per week.

Fully or semi-automatic, or manually controlled operation

Constructed of carbon steel, stainless steel or Monel metal, Sturtevant Rotary Blenders are engineered to fit each customer's needs – can be supplied with injector sprays and any desired control system.

For more on Sturtevant Blenders, request Bulletin No. 080B. (Bulletins also available on Mixers, Air Separators, Micronizers, Crushers and Grinders.) Write today. STURTEVANT MILL CO., 122 Clayton St., Boston, Mass.

6253 on Reader Service Slip

new literature Classified Listing

- **Equipment**
- **Ingredients**
- **Supplies**

Starred* Items below have been more extensively reviewed elsewhere in the magazine. Items followed by (†) indicate literature offered by advertisers. Key number in the last line will help locate these reviews, which are numbered in sequence within the various sections (Materal Handling, Sanitation and Maintenance, etc.).

Processing equipment

Facts about modern infrared and its advantages to food processors,* 8 pp, (Form 58-121) Fostoria Corp.
Circle 6223 on Reader Service Slip.

Steam and hot water generator specification sheets*, 64 pp, Cyclotherm Div., National U.S. Radiator Corp.
Circle 6219 on Reader Service Slip.

Catalog on modern food processing equipment† Hamilton Copper and Brass
Circle 6206 on Reader Service Slip.

Self-contained package cooler units†, Taylor-Burch
Circle 6184 on Reader Service Slip.

Liquid-solids blenders†, (Bul 15A-1) Patterson-Kelley
Circle 6109 on Reader Service Slip.

Steam and hot water generators†, Cyclotherm
Circle 6196 on Reader Service Slip.

Separates solids from waste water†, (Book 2777) Link-Belt
Circle 6163 on Reader Service Slip.

Packaged centrifugal water chilling system, 7 pp, (Cat EM-238) York Corporation
Circle 6254 on Reader Service Slip.

Vibrating screens, 14 pp, Syntron Company
Circle 6255 on Reader Service Slip.

Rotary blowers and pumps 20 pp, (Bul S65C), Sutorbilt Corp.
Circle 6256 on Reader Service Slip.

Rotary gates for dust collections, pneumatic conveying and feeding applications, 4 pp, (Bul V-3558), Ducon Company, Inc.
Circle 6257 on Reader Service Slip.

160 HP, oil fired steam generator, 2 pp data sheet, Clayton Mfg.
Circle 6258 on Reader Service Slip.

Motor pumps of 1/3 through 25 hp and capacities to 775 gpm, 8 pp, (Bul Form 70022) Ingersoll-Rand
Circle 6259 on Reader Service Slip.

Ingredients, food additives

Corn Sweeteners for Frozen Desserts*, 12 pp, Corn Products Sales
Circle 6145 on Reader Service Slip.

Amylose and amylopectin fractions of starch, 16 pp, revised, Stein, Hall & Co.
Circle 6260 on Reader Service Slip.

Conveyors, racks, accessories

Boltless steel shelving, accessories, 8 pp, (Bul B-40), Alan Wood Steel Co.
Circle 6261 on Reader Service Slip.

Vibrating screens, screen feeders, 14 pp, Syntron Co.
Circle 6262 on Reader Service Slip.

Wheel gravity conveyors, 16 pp, (Bul RW-58), Rapids-Standard Co.
Circle 6263 on Reader Service Slip.

Trucks and accessories

Stand-up electric lift trucks† (Brochure 5112) Yale & Towne
Circle 6154 on Reader Service Slip.

Magnesium pallet dollies,† (Bul P8-1), Magline, Inc.
Circle 6173 on Reader Service Slip.

Industrial truck selector guide, 16 pp, Automatic Trans.
Circle 6264 on Reader Service Slip.

Electric fork truck preventive maintenance chart, 4 pp. Lewis-Shepard Products, Inc.
Circle 6265 on Reader Service Slip.

Leasing handling equipment, 4 pp, Lewis-Shepard Products
Circle 6266 on Reader Service Slip.

Material handling at dairy, 4 pp, (Bul 202-1), Lewis-Shepard
Circle 6267 on Reader Service Slip.

How electric trucks allowed more production without enlarging plant, 4 pp, (Bul 283-1), Lewis-Shepard
Circle 6268 on Reader Service Slip.

Casters for medium-range loads, 2 pp, (Bul 52658), Faultless Caster
Circle 6269 on Reader Service Slip.

For safer, easier equipment cleaning . . .

DRY ACID CLEANERS

based on Du Pont Sulfamic Acid

New cleaning compounds made with sulfamic acid are sold and handled *dry*—no hazardous liquids to ship or store. Dry or dissolved in water for use, they create no fumes. Yet these cleaners have all the penetrating power of hydrochloric acid with far less corrosive effect.

Sulfamic acid-based cleaners remove scale and deposits from air-conditioning and ice-making equipment, food-processing vessels, steam boilers, milk evaporators and pasteurizers, marine evaporators and heat exchangers. Cleaning action is fast, thorough.

We'll gladly send you more information on sulfamic acid-based cleaners and the names of formulators who offer these new compounds. Just mail the coupon below.

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Wilmington 98, Delaware

Please send me: ☐ sulfamic acid general equipment-cleaning bulletin; ☐ names of formulators offering cleaners based on sulfamic acid.

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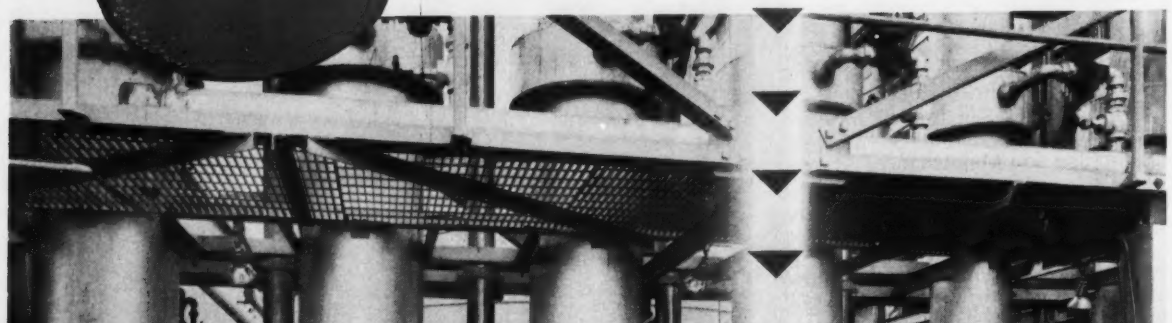
*Company*_____

*Address*_____

*City*_____ *Zone*_____ *State*_____

6270 on Reader Service Slip

the heart of the big push at American Home Foods



American Home Foods, Inc.
Oakland, California Plant

from tomato pulp to paste . . 36% solids

WAUKESHA

POSITIVE DISPLACEMENT

SANITARY PUMPS

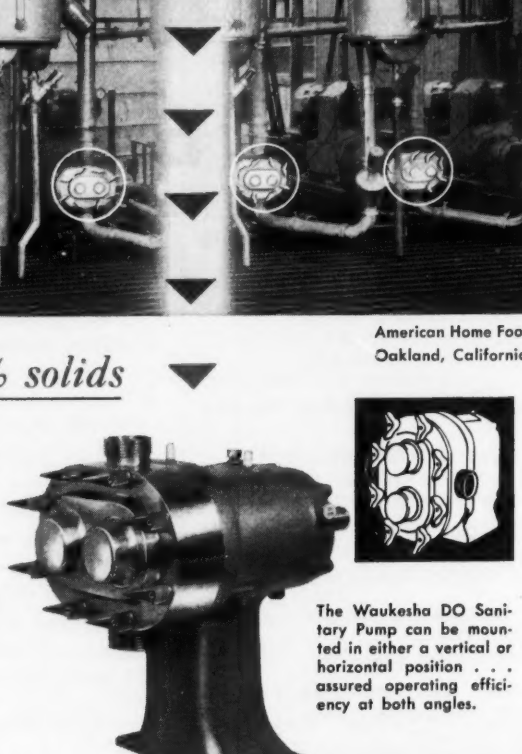
At the heart of the big push through this impressive multiple stage Thermovac Evaporator installation are 7 Waukesha 125 DO Stainless Steel Pumps.

American Home Foods, Plant Engineer, Mr. Peter Mayer, gets assured production output of a high concentrate . . .

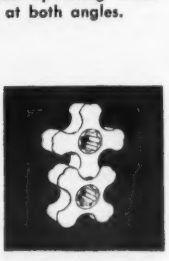
"The installation of Waukesha Pumps in our operation resulted in a reliable up-to-7 day per week production with the only maintenance required being an "O" ring change at weekly intervals."

Leading processing plants handling dense concentrates with high viscosity have serious threats of costly pump maintenance and replacement . . . leading processing plants rely on durable corrosion-resistant Waukesha Sanitary Pumps.

Our engineering staff is always available to assist you with your pumping problems.



The Waukesha DO Sanitary Pump can be mounted in either a vertical or horizontal position . . . assured operating efficiency at both angles.



SEE THE NEW WAUKESHA "WHITE RUBBER IMPELLER" PUMP AT THE CANNERS' SHOW . . . **BOOTH 37**

Waukesha **FOUNDRY COMPANY**
Pump Division, Dept. 2, Waukesha, Wis.

6271 on Reader Service Slip

new literature

Controls, regulators, indicators

CIP automatic valves†, (Bul A-658), Ladish Co.
Circle 6108 on Reader Service Slip.

Magnetic flow meters for viscous or free flowing liquids†, (Bul 20-14C), Foxboro Company
Circle 6221 on Reader Service Slip.

Bulletins on automatic controls†, Lumenite
Circle 6169 on Reader Service Slip.

Diaphragm hopper level switches, 2 pp, (Technical data sheet), Syntron
Circle 6272 on Reader Service Slip.

Measures fluid rate of flow in pipelines 2 inches in diameter and larger, 4 pp, (Bul 18B), Schutte & Koerting Company
Circle 6273 on Reader Service Slip.

Bulk weighing of dry, free-flowing and sluggish materials, 2 pp, (Data Sheet 5807), Richardson Scale Co.
Circle 6274 on Reader Service Slip.

Manometers measure pressure, vacuum in plants, laboratories, 24 pp, (Cat 2008), King Engineering Corp.
Circle 6275 on Reader Service Slip.

Packaging, labelling, cartoning

Corrugated boxes stay strong when wet†, Hinde & Dauch
Circle 6097 on Reader Service Slip.

Opportunities for profitable packaging, facts on gases used for food products†, Air Reduction Company, Inc.
Circle 6126 on Reader Service Slip.

Laboratory instruments, accessories

Starch testing instrument, accessories*, 6 pp, C. W. Brabender Instruments
Circle 6240 on Reader Service Slip.

Data on refractometers†, Bausch & Lomb Optical Co.
Circle 6224 on Reader Service Slip.

Accessories for flame photometry, diffuse reflectance, paper strip chromatography and test tube analyses, 4 pp, (Bul 737), Beckman
Circle 6276 on Reader Service Slip.

Infrared spectrophotometer, designed for analysis in infrared spectral region from 12.5 to 25 microns, 4 pp, (Bul KHV10585), Perkin-Elmer
Circle 6277 on Reader Service Slip.

Lab instruments and apparatus, 16 pp, (Cat No. 7), Will Corp.
Circle 6278 on Reader Service Slip.

Sanitation

Current and future advances in cleaning*, 28 pp, Oakite Products
Circle 6096 on Reader Service Slip.

Reduces clean-up time with in-plant chlorination†, (Bul I-58.38), Wallace & Tiernan
Circle 6227 on Reader Service Slip.

Low-cost bottle washing compound, 4 pp, (B-2383), Pennsalt Chemicals
Circle 6279 on Reader Service Slip.

Acid proof grout cement for sanitary flush joints, 4 pp, (Bul 108A), Nukem Products Co.
Circle 6280 on Reader Service Slip.

Anticoagulant rodent poison and traps, 1 p, The Huge Company
Circle 6281 on Reader Service Slip.

Maintenance

Rubberized abrasive* 8 pp, (Cat 228), Cratex Mfg. Co.
Circle 6252 on Reader Service Slip.

Operation and maintenance instructions for "W" type gear drives, 20 pp, (Bul 965), The Pfaudler Co.
Circle 6282 on Reader Service Slip.

Controlled chemical removal of lime scale and rust, 8 pp, (Bul F.9688R2), Oakite Products
Circle 6283 on Reader Service Slip.

Wood treatments and finishes for interior or exterior, 4 pp, (Brochure BP2020), L. Sonneborn
Circle 6284 on Reader Service Slip.

Piping, pumps, valves, accessories

Inspect steam trap in 40 sec†, (Lit. Kit 2A), Sarco Co., Inc.
Circle 6228 on Reader Service Slip.

Steam traps and screen strainer†, Yarnall-Waring
Circle 6135 on Reader Service Slip.

Miscellaneous

Slotted angle steel framing, 8 pp, (Bul 958), FlexAngle Corporation
Circle 6285 on Reader Service Slip.

Technical bulletin on cation exchange, 8 pp, (Bul 4530-A), Cochrane Corporation
Circle 6286 on Reader Service Slip.

Quick setting silicone rubber vulcanizes in 30 minutes, 2 pp, Dow Corning Corporation
Circle 6287 on Reader Service Slip.

Fluorocarbon plastic to solve industrial problems and improve performance of processing equipment 4 pp, FluoroPlastics, Inc.,
Circle 6288 on Reader Service Slip.

CONFECTIONER'S CORN SYRUP

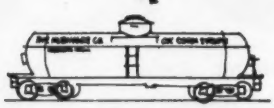
Your profits are largely dependent on a customer's next bite of your confection. If the taste or texture varies from the expected, if the color or consistency has been altered by shelf life . . . you might lose an otherwise satisfied customer.

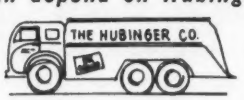
With control of taste, texture and shelf life so important, it's no wonder so many candy makers depend on OK BRAND Confectioner's Corn Syrup.

Dependable because OK BRAND Confectioner's Corn Syrup is shipped only after it passes rigid quality controls. Its formulation and refining is under constant check by experienced technicians. It must measure up to your specifications.

Economical because OK BRAND Confectioner's Corn Syrup is easy to use, cooks fast without foam problems, won't crystallize. Holds moisture properly to assure lasting freshness. Yet, it costs no more than ordinary sweeteners.

Hubinger's candy consultants (the most active in the industry) are well known to you. They are always available to confer on all your production problems. Ask "The man from Hubinger"—write or phone for this service.

You can depend on Hubinger for  *fast shipment by rail . . .*



. . . prompt delivery by truck . . .

THE HUBINGER COMPANY
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NEW YORK • CHICAGO • LOS ANGELES • BOSTON • CHARLOTTE • PHILADELPHIA

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Cook-Chex takes the last trace of guesswork out of production control.

1. Eliminate wrong cook schedules.
2. Keep retort baskets in sequence.
3. Guard against "by-passing" retorts.
4. Provide low-cost permanent records for your cooking-plant.

Cook-Chex is the chemically impregnated retort tag that changes from purple to green *only* after your run has been properly and completely retort processed. Hang a Cook-Chex on each basket before retorting — inspect it after withdrawing. You have the full "protection" record at a glance. It's that easy — that sure.

Used by *all* major packers. Approved and recommended by cannery inspectors. Ask *them!*

Send for Free samples.

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TEMP-R-TAPE®

Apply TEFLON* in seconds

. . . end sticking and build-up

Teflon's non-stick surface is now available in an easy-to-use adhesive tape called Temp-R-Tape. On heat sealing bars, flat plates, dies or wherever a slippery surface is needed, Temp-R-Tape ends sticking and build-up. Temp-R-Tape is odorless, tasteless, non-contaminating, has −100°F to 500°F range. 1/4" to 12" wide, .002" to .013" thick. From stock. Recommended by machinery, paper and film producers.

* *du Pont T.M.*

FREE SAMPLE *and folder . . . write, phone or use inquiry service.*

A PRODUCT OF CHR THE CONNECTICUT HARD RUBBER CO., NEW HAVEN 9, CONN.

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SPEAS

APPLE PECTINS

Standard of Quality for 30 years

BETTER JAMS
Jellies and Confections Because . . .

1. *Wide pH Range*
2. *Uniform Strength*
3. *Neutral in color and flavor — blends naturally with more different fruits than any other pectin*
4. *Makes jams & jellies with an even, smooth texture (never grainy) and improved spreadability*

- **NUTRL-JEL** Regular and Slow Set. } For Preserves, Jams, Jellies and Marmalades
- **CONFECTO-JEL** For Jellied Candies — Ready to use.

For full information, technical advice, and formulas write Dept. FP-2

Plants in Apple Regions From Coast to Coast Assure Dependable Supply

SPEAS COMPANY, GENERAL OFFICES, KANSAS CITY 20, MISSOURI

6292 on Reader Service Slip

Grain surplus

(*Continued from page* 30)

views of success and failure. What has been accomplished for the resources focused on this research?

There are at least six major achievements to this effort:

1. Many foods can be successfully stabilized with radiation.
2. Packages are available and suitable for irradiated foods.
3. The nuclear physics problems relating to the process have been or soon will be resolved.
4. Radiation stabilized foods are being established wholesome and useful for mankind to consume.
5. Of the foods tested on consumers, they generally are unable to tell which item in a meal has been radiated.
6. The cost of radiation stabilization of food within the next few years could be as inexpensive as steam sterilization.

An example of the challenge facing the food industry can be seen in the following. Other examples are apparent.

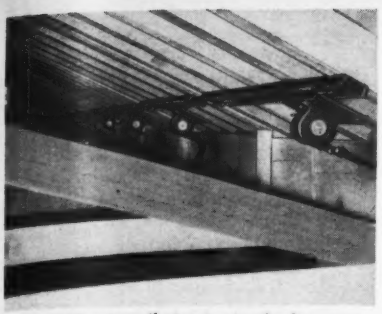
Chicken ideal choice

Most people like meat and most people on earth enjoy chicken, as an example. The chicken happens to be the most efficient converter of grain to flesh known to mankind. This nearly mechanical refinery of flesh is approaching a conversion of a pound of grain to a pound of broiler experimentally.

Unfortunately, conventional methods of distributing chicken flesh involves a high order of industrial development. There is no method of cheaply distributing meat. Unrefrigerated, meat is marketable for a day. Fresh meat if refrigerated allows a few weeks. If frozen, the meat is constantly being processed. And, it is not inexpensive.

The production capacity of our soils cannot be unleashed in yielding grains due to their great surplus. The stored grains soon lose their value, and if not consumed, decay away.

The cost to maintain these



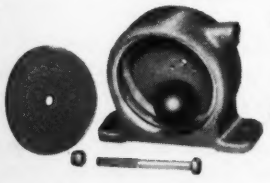
AiroViber installation is simple, low-cost.

Keep bulk materials MOVING!

Gain Quiet, Efficient Materials Movement and Low-Cost, Maintenance-Free Operation with AiroViber Vibrators!

Wherever you load, unload, move, package, process, grade or separate bulk materials, you can keep them MOVING with simple, ball type, pneumatically-operated AiroViber Vibrators!

- Start without fail.
- Trouble-free — only one moving part.
- Completely uneffected by surrounding conditions or temperatures.
- No lubrication needed.
- No periodic maintenance required.
- Speed is controlled by air valve.
- Amplitude can be altered.
- Where explosive conditions exist bronze balls may be used.



Steel ball (only moving part) rolls on hardened, ground track.

WRITE TODAY for full information!

VIBER COMPANY 726 S. Flower St. Burbank 56 California

VIBER CO

Pioneers and leaders in the manufacture of

VIBRATORS

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surplus grains is tremendous, and is not recoverable. The cost to distribute grains, even if given away, prohibits vast distribution. It is a further financial, and prohibitive burden to make no use of the grain.

Chicken happens to be the most successful radiation treated food, currently.

Radiation sterilized chicken has been stored successfully for more than a year at room temperature. After this period of storage, when prepared for the table, consumers find the chicken as acceptable as its freshly procured counterpart, and are usually unable to tell which item in the meal was treated.

Radiation pasteurized chicken can be held at cool refrigerated temperatures for more than 100 days, while untreated counterpart chickens have a distribution life in the order of two weeks (see photo).

Radiation resources

It has been estimated that sufficient surplus, currently wasted radiation is available in the USA to stabilize all the chicken that could be made from all the surplus grains we have in storage, and also going to waste.

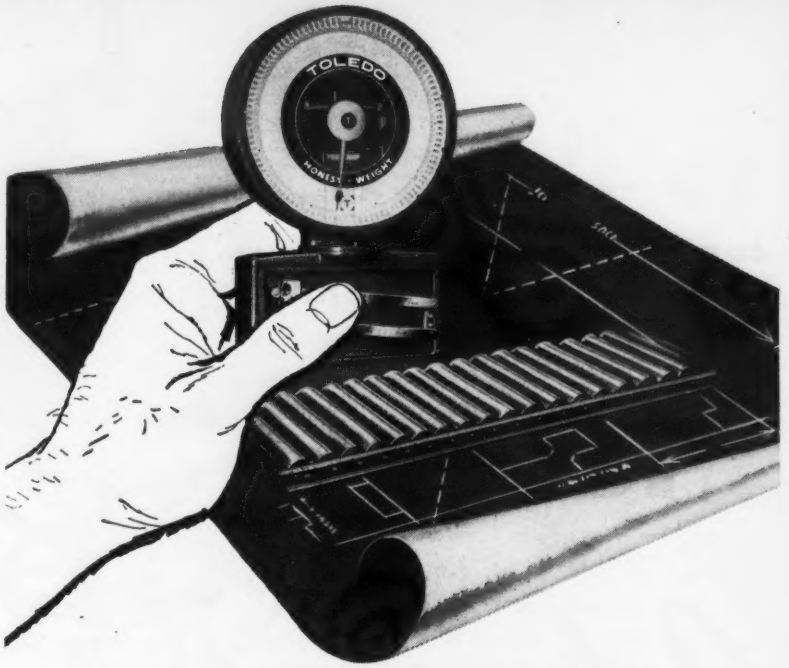
We have accumulated vast amounts of radioactive materials in the USA. The cost to dispose of these materials is fantastic, and may eventually equal the cost involved in their production.

The tremendous wealth in radioactive wastes is being followed by more of the same, in increasing quantities. Increasing quantities will involve increasing outlays for burying more material. As atomic energy applications expand, the pool of radioactive material will also expand.

There are conflicting views and interests in the radiation stabilization of food process.

It is obvious that radiation stabilization of food will not make obsolete the vast refrigeration facilities which are spread over our land; it is obvious that most people on earth have no refrigeration facilities.

(*Continued on next page*)



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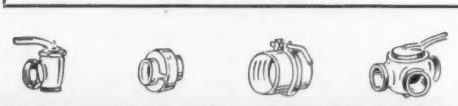

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Grain surplus

(*Continued from preceding page*)

Actually we in the U.S.A. make up a minority in the world, amounting to about six per cent of the total. In Europe less than five per cent of the people have refrigerators in their homes; in the other less industrialized continents, the percentage is even lower.

There would therefore appear to be at least two distinct applications for radiation stabilized foods. One is where a refrigeration facility exists; the other, where none exists, and has little likelihood of existing.

It remains now for our society to exploit the vast potential of peaceful uses of atomic energy. The food industry has the organization and "know how" to develop our resources, and with an expanding technology, change the losses in storage of surplus grains, for example, to a profit from greatly desired animal flesh.

Presently unused radiation could recover the value of these materials and expand them from complete losses to profit.

This would directly benefit the taxpayer in the USA and at the same time, benefit the people touched in the world market-place with increased meat for their tables.

Upheaval

(*Continued from page* 38)

above says, "Bulk pasteurization has economic advantages, and offers a qualitative improvement in the beer beyond that of a bottle pasteurizer."

Application in the wine industry is growing.

It remains to be seen whether or not these advantages can be realized under the high-speed operating and marketing requirements in American breweries and other beverage plants.

The next few years are bound to bring increased interest in aseptic packaging of beverages teamed with either bulk pasteurization or sterile filtration.

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that's interesting

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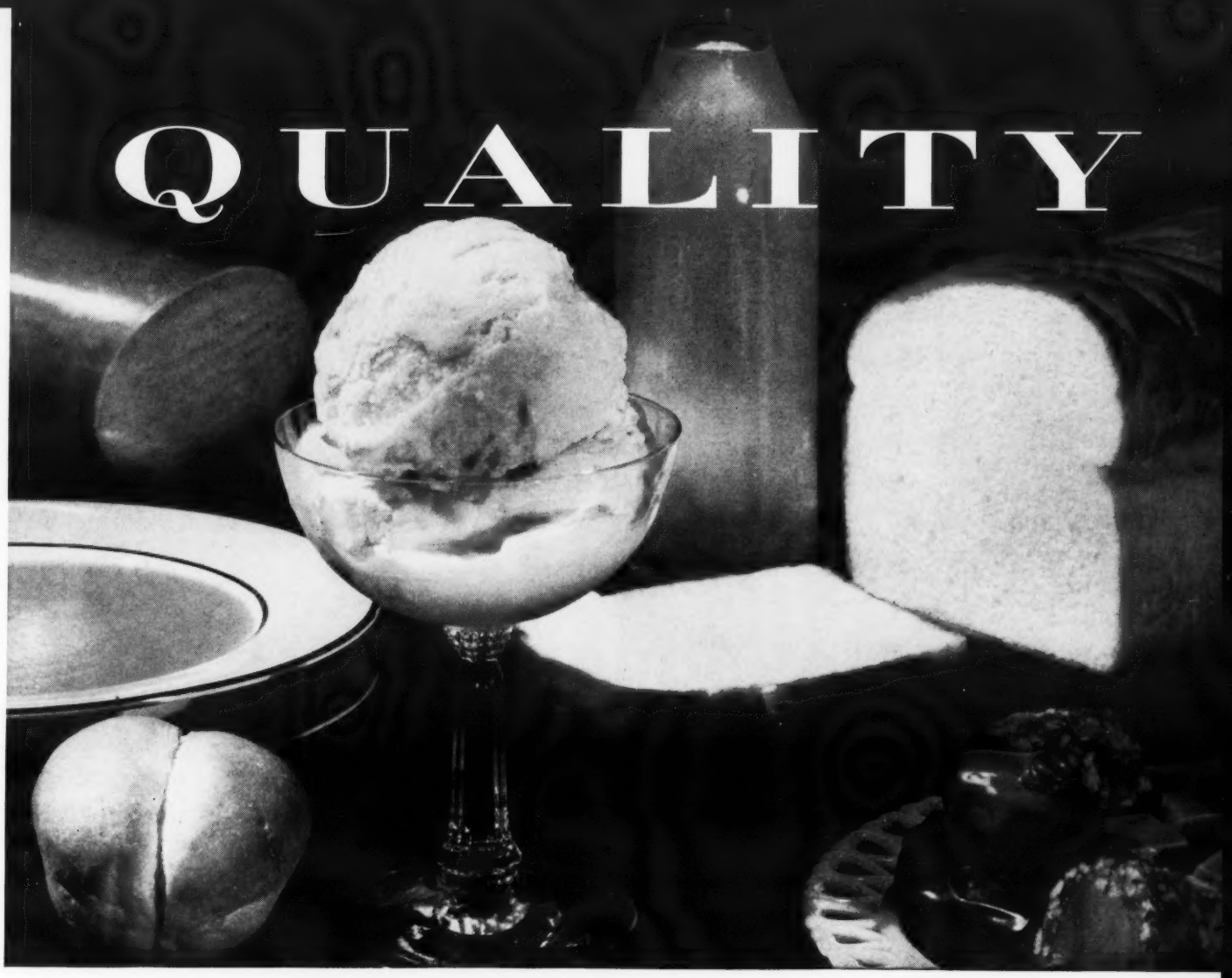

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